WATER RESOURCES

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BEFORE THE

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WATER RESOURCES

THURSDAY, DECEMBER 3, 1959

U.S. SENATE,
SELECT COMMITTEE ON NATIONAL WATER RESOURCES,
Jacksonville, Fla.

The select committee met at 9 a.m., pursuant to Senate Resolution 48, in the main ballroom, George Washington Hotel, Jacksonville, Fla.

Committee members present: Senators Kerr (presiding), and Young of North Dakota.

Also present: Senator Holland, Representative Bennett.

Theodore M. Schad, staff director of the select committee, and Paul McBride, chief clerk.

The CHAIRMAN. Our committee is very happy to be in Florida.

When I came here I thought that Florida was the third largest State east of the Mississippi River. Your distinguished senior Senator has enlightened me in that regard and assured me that it is the second largest State east of the Mississippi River, and certainly a State abundantly blessed with almost limitless quantities of fresh water.

You in Florida today are as much aware as are the people of any State in the Union—I say that here, but if I were a certain number of miles west I might say, "Except one," although you are certainly at least as aware as California—of the tremendous growth in the population of our country. The members of this committee are personally doing nothing about that at the moment. I want to say that I do not consider this population growth to be a pessimistic situation; however, with our country growing at the rate of 3 million people a year and going into a time when that increase will be much more, and with many of the areas of the Nation feeling the pinch of increasing shortages of fresh water, the Senate felt it was appropriate to make a thorough study of the water resources of our country. We hope to determine to the most accurate degree possible what the Nation's requirements will be in the two decades ahead, where the water is available with which to meet those requirements, and how it can be controlled and conserved in order that those requirements may be met.

It has taken our country 352 years, figuring from Jamestown, and probably 414 years if we figured from St. Augustine—1545 you told me, did you not, Senator?

Senator HOLLAND. 1565.

The CHAIRMAN. 1565 and 394. Let's get that right. What is it, Milt?

Senator HOLLAND. 394.

The CHAIRMAN. You know, there must be an educated person out there—to become a Nation of 178 million people. The exeprts in the Census Bureau tell us that that population is going to double in less

than 40 years. We go out of this year with a gross national production of nearly $500 billion. Industrial engineers confidently predict that the gross national product on the basis of today's dollar value will double in 20 to 25 years.

It is our conviction that this tremendous upsurge in production, agricultural and industrial, will occur in the areas first where there is available fresh water, unpolluted fresh water, and second, where the natural resources are available on which industrialization is developed and the soil resources where agricultural production can be had.

We are convinced that population growth will be in the areas where the water and the natural resources abound and the people vigorously take advantage of this tremendous opportunity by conserving, controlling, and having available for domestic, municipal, and industrial consumption these tremendously greater quantities of water. So we are glad to be in Florida, represented in the Senate by two of the most able men in the Senate.

I said last night over at the meeting here of your local citizens—where I more or less had to muscle my way to the speaker's table to be permitted to speak because you have a major general down here that does not believe in anybody speaking but himself—that I was not going to admit something in Florida different from what I claimed in Oklahoma and that was that Florida has the two best Senators in the U.S. Senate. I hope I lost no position with you locally by declining to make such an admission. But I certainly do not know of but one State definitely and another one probably—I am not acquainted yet with the second Senator from North Dakota—that is as well represented in the U.S. Senate as Florida is.

It was my privilege when I was Governor of Oklahoma to become very closely associated with your great Spessard Holland, then your Governor. He and some others of similar charitable mind and friendly thought were responsible for my being selected as chairman of the southern Governors' conference in 1944 and then again in 1945.

When I went to the Senate I found that he had beat me there by some years due to the wisdom of the people of Florida. It has been my privilege to serve with him for many years on the Public Works Committee, and also with your junior Senator, on the Finance Committee.

We are happy to be here. I am going to ask Senator Milton Young, of North Dakota, if he has anything to say, either to add to or detract from what I have said.

STATEMENT OF HON. MILTON R. YOUNG, U.S. SENATOR FROM THE STATE OF NORTH DAKOTA

Senator YOUNG. Thank you, Senator.

I certainly would have nothing to say that would detract from what you have already said.

It is a real pleasure for me to come here to Florida today to hear firsthand more about its vast water resources. I doubt if there is any State that has more water resources than the State of Florida. Many of them are already developed but there are many more to be developed. May I say that the parts that are not developed are not the fault of your Senators from Florida, and particularly your senior

Senator. He has a way of presenting the cases for these water projects and he has a benefit cost ratio of 5 to 1, 4 to 1. We feel lucky if we have 1.05 to 1. I do not know how he builds up these figures, but he is bringing in some very worthy projects.

In the future development of our Nation, I do not know of anything that will play a more important part than development of our water resources. You in Florida are fortunate to be so richly endowed. I will be very interested in hearing the testimony today.

The CHAIRMAN. I am not going to intimate it publicly, but the thought came to me while you were talking, Senator Young, that there is competition going on between Florida and California and neither one of them has underestimated their resources and neither one of them has ever underrated them that I have heard of.

Now this committee has been to California and I might say to you, Senator Holland, that there we got what was purported to be the lowdown on Florida and of course while we are here, if in addition to giving the committee the benefit of your information with reference to Florida, I want you to know that it would not be inappropriate for you to give us the confidential information that you may have on California. It just may be, having come to both States, that we will be better informed with reference to the other one than we were when we left the other one.

We are glad to be here with Congressman Bennett, also.

Now we are going to hear any statement that Senator Holland has to make and then he will call on the witnesses that have been scheduled to appear before us.

Senator Holland.

STATEMENT OF HON. SPESSARD L. HOLLAND, U.S. SENATOR FROM THE STATE OF FLORIDA

Senator HOLLAND. Thank you, Mr. Chairman, Senator Young, I will not endeavor to make any statement on my own accord about the resources of our great State because I think you are going to hear them declaimed to good advantage here by the witnesses from the various objectives, projects, and areas.

I want to say how happy I am to have both of you Senators here. For the information of the Floridians, I want you to know that there are no two Senators in the Senate more devoted to the cause of development of natural resources, including water resources, than the two who honor us by the presence today. I happen to have served with both of them. In the case of Senator Kerr, as stated, in the Public Works Committee where he is now chairman of the Rivers and Harbors Subcommittee, that his leadership was recognized again by his being named as chairman of this select committee comprised of members not only from Public Works but from the Committee on Interior and Insular Affairs, the Interstate and Foreign Commerce Committee, and the Agriculture and Forestry Committee. It is good to have them coming here to hear about our water resources. In spite of the fact that we are celebrating our quadricentennial this year, Senator Kerr, we have not, in those 400 years, been able to develop all of the water resources of Florida. We hope to make

faster progress in the near future, thanks to our kind friends who have come here to look over the situation.

Senator Kerr, of course, comes from the State that produced Will Rogers and I think you have already seen that he is carrying on worthily to maintain the reputation that Will made. He is also one of the leaders of the Senate in the field of finance and agriculture and public works.

Senator Young is the only man from North Dakota that got the support of every faction there. I do not know how he does it, because all politics are extremely controversial in that State, but I have been there with him on two occasions and he is the one man who lines up everybody and nobody even thinks about running against him any more.

I have had the pleasure of serving with him on both the standing committees to which we are each assigned, Appropriations and Agriculture and Forestry.

I do not know how we could have found two greater friends of resource development, or harder workers in the cause of making America fulfill her greatest potentiality and her manifest destiny, than these two Senators.

Now, just a word about the hearing.

The staff has prepared a list of some 21 witnesses here. I note that the witnesses who appear for the State or for statewide objectives have been placed first. I certainly approve that place.

As to the other witnesses, I assume they have been placed in the order that their names came in and I shall call on them in that order with this understanding, that if there is anyone here who has to get away early or anyone who feels that his placement on the list is not logical from the point of view of the arrangement of witnesses generally, I hope he will see this gentleman here on the right who is the chief of the staff of the committee and make arrangements to have his place changed on the list.

This mimeographed copy has been made generally available, has it?

Mr. SCHAD. We did not have time to mimeograph it. We just have a few copies.

Senator HOLLAND. Any of you who wish to see it may have a copy, of course. If your placement is not appropriate in your opinion, please take it up with this gentleman who is the chief of staff.

Without further ado, I think we should start on this very, very momentous hearing. We do have a tremendous abundance of fresh water, Senator Kerr, but I think I would be the first to say that we are not utilizing it to the best advantage even from the present standpoint of best service of our State and people and Nation, much less from the standpoint of permanent service.

We greatly approve the study which you are making in this State—and nationwide—toward getting resources of fresh water, toward better land use which depends on fresh water use, and all of the other good objectives which will be served by the completion of your study.

I note that the first witness here is Mr. John W. Wakefield, director of the Department of Water Resources of the State of Florida and I understand he appears for that department and for the State soil conservation board. Someone told me he was appearing also for Governor Collins.

Is Mr. Wakefield here?

Mr. WAKEFIELD. Yes, sir.

Senator HOLLAND. Before you start, may I say that I am distressed that Senator Smathers had an appointment elsewhere which prevented his attendance today. He asked me to say to those who would be here that he regretted his inability to attend and of course we all do.

I am so glad that Congressman Bennett could be here and I wish that the whole Florida congressional delegation were here.

Will Congressman Bennett come up and take this seat here?

Representative BENNETT. Thank you. I will.

STATEMENT OF JOHN W. WAKEFIELD, DIRECTOR OF THE DEPARTMENT OF WATER RESOURCES OF THE STATE OF FLORIDA

Mr. WAKEFIELD. Thank you, Senator Holland. Mr. Chairman, Senator Young, I want to welcome you to the State of Florida on behalf of the Governor and of the State, particularly on behalf of all of the various State agencies, and there are quite a number of them, that are concerned with water resources.

We have previously submitted a statement in response to your request, summarizing the water potentials of Florida and estimating demands that we believe will be called for by 1970–75.

I think that report is self-explanatory and requires no comment at this time but we have prepared a supplementary statement here which I have copies of, more copies if they are necessary, to discuss the effects of national policies on our water resource problems and to suggest some possible changes in policies that we think might aid us in our program.

Our previous statement emphasized the fact that Florida has sufficient water of good quality to meet all foreseeable needs. The rate of supply and the distribution of the available water both as to time and space is not, however, uniform or constant. Thus, large quantities of water are wasted to the ocean and the gulf during wet weather while shortages occur in some areas annually on a seasonal basis and generally statewide during years of deficient rainfall.

At the present time, most sections of the State are beginning to recover from the wettest 9 months ever recorded. Severe flooding still persists in extreme south Florida and along the central peninsula and numerous other areas have suffered flood damage this year. It is probable that some flooding would have resulted this year even if runoff factors had not been influenced by works of man, but there is no doubt whatsoever that the floods have been aggravated by man's effort to improve his environment by building structures, roads, airports, and so forth and by his efforts to increase the productivity of the land by clearing away the forests and draining swamps and marsh areas. Now, as a result of this and previous floods, renewed efforts are being made to carry off the floodwaters at a faster rate.

On the other hand, only 2 years ago the State was just recovering from the longest and most severe drought ever recorded. Lakes were reduced to mudholes, many streams were dry or contained only a trickle and the artesian water level in the principle water-bearing aquifer had dropped to such an extent in some areas as to require

lowering of pumps and drilling of additional wells to meet the demands.

The department of water resources, which I represent, was created as a result of concern over drought conditions to develop means by which the available water could be conserved and more widely distributed to meet required demands. It must also, however, be concerned with flood conditions both to protect the citizens from flood damage and also to develop means for the correction of flood conditions without overdrainage.

To meet the needs for water control during both drought and flood, the department of water resources is developing a plan predicated on the long established Florida policy of leaving control of water resources in the hands of the people who benefit by such control. It is proposed that this be accomplished by establishing water basin water control districts, the boundaries of which would be dictated by the physical limits of a watershed rather than by political boundaries. Operating control of the districts would be vested in a board whose membership would be made up of citizens of the district. The cost of necessary works and the cost of operating the district will, in general, be borne by benefited taxpayers.

The State has a vital role in this concept of water control. First, authority to create water-control districts and thus, to pattern the plans of water control is a fundamental function of the State. The pattern should be developed to prevent conflicts between districts and to assure adequate coverage of the State. Secondly, the State must coordinate data collection and analysis to insure that the districts have adequate facts on which to base their water-control plans. Third, the State should assume operating responsibility for those portions of the State that due to hydrologic or topographic conditions cannot be allocated to a single basin authority. Fourth, the State should offer financial encouragement to the basin districts to stimulate their creation and to assure compliance with the State plan.

Florida is actively engaged in this program. The Central and Southern Florida Flood Control District is the first district to meet all of these requirements. However, basinwide districts have been created for the Peace River Basin and for the Suwannee River Basin and a number of other areas are displaying an interest in such districts. The State has appropriated funds for financial assistance to the Central and Southern Florida Flood Control District and has made loans or grants to several smaller districts.

The Federal Government, likewise, has a vital role in the development of Florida's water resources, but the integrated team concept should be kept constantly in mind. Just as the State delegates to local boards the authority to control water within their local areas, the Congress has delegated to the States responsibility and authority to allocate and control waters within the State. There appears, however, to be some doubt as to the congressional intent which could be removed by a clear expression from the Congress reaffirming that the State has responsibility for water control and allocation. We strongly commend and support such legislation as H.R. 5555 and companion bills or H.R. 1234, all of the 86th Congress which seek to achieve that end.

Like the relationship of the State to the basin district, we believe that the Federal Government can provide leadership to assure an adequate national plan for water resource conservation and control and can stimulate State activities by the judicious use of financial assistance. We especially commend such programs as those undertaken by the U.S. Soil Conservation Service under Public Law 566 and by the Public Health Service under Public Law 660. Both of these programs retain the local initiative while stimulating increased activity through Federal contributions to local projects.

Continuing the team concept, it is important that each member of the team know the part he is to play. For example, it is almost impossible at the present time for the State to forecast at the proper time the amount of State appropriations that will be required to match Federal appropriations in financing joint projects. The Florida Legislature meets biennially in odd-numbered years and adjourns prior to July 1. The Congress on the other hand appropriates on an annual basis and the appropriation bill usually is passed after the State legislature has adjourned, if it meets at all in the year in question. It would appear reasonable to request Congress to either commit to match a percentage of the State appropriation up to a maximum limit or to schedule appropriations over a longer period of time.

Both courses have advantages. The first would constitute a powerful lever on the State legislature for reasonable appropriations, while the second would permit intelligent long-range planning and scheduling of contracts. This latter course would be especially helpful in maintaining continued local interest on large projects requiring extended periods of time for completion. The central and southern Florida flood control project, for example, is now in its 10th year and it will obviously be several more years before work can be undertaken in the Kissimmee River Valley. If the Congress could commit to a definite schedule that would show a start in the Kissimmee Valley within, possibly, 5 years it would do much to keep the property owners in that area from completely losing heart.

The team concept also requires that local and State members of the team should be able to forecast with reasonable accuracy those projects in which the Federal member of the team would be willing to take part. A careful definition of projects of national interest would permit local agencies to assess their chances of obtaining a Federal appropriation more accurately and thus encourage local and State agencies to undertake local projects without Federal help.

Having defined the classes of projects subject to Federal participation, it then becomes important to assure that all of the potential beneficial uses are given fair consideration. It appears to us that benefits to commercial navigation and agriculture are given greater weight than equally valuable recreational benefits. The Fish and Wildlife Coordination Act (Public Law 85–624) purports to place wildlife on an equal footing with flood control, irrigation, navigation, and hydroelectric power in Federal water resources programs, but so far the effect has been to increase the costs without commensurate increases in the benefits.

We wish to recommend that this committee consider ways to assign a monetary value to recreational activities and that the value be com-

mensurate with that which the average individual is willing to pay to enjoy such benefits.

We wish to especially urge your committee to give consideration to measures that will break down preconceived prejudices on the part of either the legislative or the executive branch toward broad classes of projects. Probably the most dangerous of these is to label all water improvement projects as "pork barrel." Another is to issue a blanket decree against all "new starts." These terms seem to assume that all water improvement projects are unnecessary luxuries even though they might be desirable. Such is definitely not the case for a number of Florida waterways where the encroachment of civilization has upset the delicate balance of nature. Many of these are purely local projects which should be financed on a local or State level, but certainly a project to enlarge the carrying capacity of a waterway to match runoff resulting from urbanization cannot be classified as boondoggling. Assuming that a project otherwise qualifies for Federal aid, there is no more justification for holding up a needed Corps of Engineers project for flood control than there is to hold up a needed Corps of Engineers project for a defense installation. The test should be whether the project is necessary, not the classification in which it happens to fall.

The other type of prejudice which gives us cause for concern is the prohibition of reclamation and land enhancement projects in this section of the country. We contend that reclamation by which muck lands are made available for the production of winter vegetables and fruits is just as important to the health and welfare of the Nation as is reclamation in the Western States. This land does not produce farm products that are in overabundance and there is no reason whatever to classify the Everglades muck lands with the corn and cotton lands of other sections of the South, including north Florida.

Regarding land enhancement, we know of no method by which the danger of flood can be reduced or bountiful water supplies can be assured in dry seasons that will not enhance the value of the lands that are thus protected. Any measure that will remove the threat of constantly recurring floods or will assure sufficient irrigation water during periods of drought will certainly stimulate the farmer to carry on more intensive cultivation which, in turn, will result in increased productivity.

Any measure relieving urban lands from the threat of floods will almost certainly result in more intense development and in enhancement of land value. These are, in our opinion, desirable benefits to be achieved by water control which, in turn, increases the tax revenue to meet local and State shares of project costs.

In summary, we again wish to stress that Florida is on the way toward developing an adequate plan to assure conservation and distribution of its bountiful water resources. Much of this effort should be financed locally, but in some cases, local and State efforts require stimulation from Federal sources in order to get them underway. In some cases, the principal benefits will accrue to the entire Nation and the Federal Government should be the dominant agency. The cross-State barge canal project is an example.

In a few cases the otherwise local project is of such a magnitude that without Federal aid a much needed project could never be undertaken.

The central and southern Florida flood control district is an example of this. In any case, operation and control should be placed in the hands of the smallest unit that can accomplish the desired works and the State is the proper agency to coordinate these activities.

The Congress can best aid the State and local efforts by (1) reaffirming the delegation of authority to the States to allocate and control water; (2) defining types of projects to which the Federal Government might be expected to contribute; (3) providing for long-range planning and scheduling of projects to which the Federal Government contributes; (4) removing unnecessary prejudices which seem to be applied on a blanket basis without regard to the merits of individual projects; and (5) stimulating local and State efforts by contributing to well-planned and well-conceived local projects as contrasted with the requirement of local assistance for Federal projects.

The Nation's water resources can, in our opinion, best be protected and developed by employing a team approach involving local, State, and Federal agencies. The State should retain its historical position as the coordinator of the team while active operation and administration should be a local responsibility. The Federal Government can best serve the team by stimulating adherence to a national plan. This scheme will assure flexibility to conform to varying needs in various parts of the country without sacrificing the basic precept that the Federal Government should concern itself with the welfare of the country as a whole.

Thank you, sir.

The CHAIRMAN. Thank you. I would like to ask one question, Senator Holland.

The second paragraph on page 4, last sentence, says:

We wish to recommend that this committee consider ways to assign a monetary value to recreational activities and that the value be commensurate with that which the average individual is willing to pay to enjoy such benefits.

I assumed that you are talking about developing a formula which would give value or which would recognize the economic value of the recreational aspects of a multipurpose project.

Mr. WAKEFIELD. Yes, sir.

The CHAIRMAN. Have you given consideration to what will be an appropriate and equitable yardstick for measuring that economic value?

Mr. WAKEFIELD. I have no formula developed, sir. Yes; I have given consideration to it.

The CHAIRMAN. Would you give the committee the benefit of your thinking on that?

Mr. WAKEFIELD. It is my thought that the value should be based, as I stated, somewhat on the level that sportsmen and people enjoying these benefits are willing to pay for such benefits.

The CHAIRMAN. You did not contemplate a toll aspect?

Mr. WAKEFIELD. No, sir; merely that, for example, I think it is a little bit unrealistic to assign, let us say, $1 per fisherman day when the average fisherman is willing to spend $5 or $10 in order to do the fishing.

The CHAIRMAN. As I see it, it will be difficult in any regard to secure acceptance both by the Congress and the Executive of a predetermined scale of values. However, if such an element is to be pro-

vided and available, it will have to be on a predetermined basis because the time that this economic value is vital is when a proposed project is being surveyed and evaluated by the appropriate Federal agency.

Mr. WAKEFIELD. Yes, sir.

The CHAIRMAN. So there will have to be an arbitrary yardstick developed and provided if the objective you seek and with which I am in complete agreement is to be obtained.

Mr. WAKEFIELD. I agree with that, sir.

The CHAIRMAN. Frankly, I am personally sponsoring legislation that would fix such a value and direct that it be recognized in determining the economic elements necessary to justify authorization.

And the Corps of Engineers has evidenced not only interest but the attitude to recognize that such an element should be among the items of assets in the economic evaluation, and so has the Bureau of Reclamation. The Bureau of the Budget advises that they recognize there is such a value, but they have not gotten around yet to being willing to say what they think that value might be. That is the reason why I asked you if you would give the committee the benefit of what you think it might be because we are going to have hearings on this. We are going to have to come to grips with it. We are going to have to make a decision. If anything is done, and for it to be of any value when made, it must be one that will be accepted and adopted.

Mr. WAKEFIELD. We have not yet worked up any definite recommendations on it. But I would like to have the privilege of doing so, sir.

The CHAIRMAN. You said you thought $1 a day was an unrealistic estimate. I would say that if we could get a yardstick even of that limited specification adopted it would be of tremendous assistance in the matter of making an accurate and equitable evaluation of these projects and would result in many being of such economic assets as to justify authorization which otherwise would not be.

Mr. WAKEFIELD. I agree with you, sir.

We have one aspect that is very important to us and that is recreational boating. We have many streams that have in the past had commercial boating on them that no longer have commercial boating but have a great deal of recreational boating.

The CHAIRMAN. I think there is great economic value to a project for recreational purposes other than boating or fishing and the use of which by the public generally generates commercial activity and economic benefits which should be recognized right along with the fishing and boating.

Mr. WAKEFIELD. Yes, sir.

The CHAIRMAN. If you develop some definite thoughts and recommendations on that, I would be very glad if you would provide them to the committee.

Mr. WAKEFIELD. Thank you, sir.

Senator HOLLAND. Thank you, Mr. Wakefield.

Senator Young, have you any questions?

Senator YOUNG. Just one or two.

Do you have any projects here that tend to reduce the value of fish and wildlife interests?

Mr. WAKEFIELD. We have projects that may do some damage in certain parts of the project. I don't think that the overall effect is reducing the value; no. In other words, if you take the project as a whole, I think in most cases it is enhancing the value of recreational benefits. But if you put too much water in a lake, for example, or raise the level of the lake above a certain stage, the propagation of fish in a particular part of the lake may be damaged.

Senator YOUNG. Do you have any figures on the amount of money that the State of Florida and its political subdivisions match each year on these Federal projects?

Mr. WAKEFIELD. The State has been matching in the central and southern Florida flood control district. This is the only Federal project that the State is matching funds with at the present time.

The State has been appropriating, I believe, an average of about $3 million a year. This present biennium is $2,500,000 for the first year of the biennium and $750,000 for the second year.

Senator YOUNG. For that one project?

Mr. WAKEFIELD. For that one project; yes, sir.

Senator YOUNG. That is all. Thank you.

Mr. WAKEFIELD. Thank you, sir.

The CHAIRMAN. Senator Holland, I would like at this moment to interrupt and present to this fine group of people the personnel of the staff of this committee.

No one is more aware of the importance of the senatorial Members than I am nor is anyone more aware of the fact that in order for that importance to be substantiated and recognized we have to have a lot of brains back of it other than those the Senators have. We have them in the personnel of our staff.

I would like to present Mr. Ted Schad, who is the staff director of this committee and ask him to introduce the other members of the staff that appear.

Mr. SCHAD. Thank you, Senator.

Our committee has received a lot of help from the other committees concerned with water resources development, as well as from the members of this committee. Some of the members have sent staff members along to represent them and to assist the committee with the hearings. First I would like to introduce Mr. Phil Dickinson, representing Senator Engle of California.

The CHAIRMAN. I thought it was especially important that you knew that he was in the room.

Mr. DICKINSON. I was hoping that might be concealed, Senator. I am glad to be here, anyway and am sorry that Senator Engle cannot make it.

Mr. SCHAD. We have Mr. Doyle Kline, representing Senator Anderson of New Mexico, and Miss Muriel Ferris, representing Senator Hart of Michigan.

The other Senate committees that work in water resources have been mentioned and we have Mr. Gene Eaton who is on the staff of the Interior and Insular Affairs Committee and Mr. John Mutz, of the Public Works Committee, who are helping this committee staff with these hearings and the other work.

I hardly need to introduce one of our consultants who is a resident of Florida, I am sure you know him; Herb Gee, who is a consultant

to the committee and who, I believe, assisted Senator Holland in some measure in preparing for this hearing.

We also have one of Senator Kerr's assistants, Malvina Stephenson along. I do not think she is here. We have one of his secretaries traveling as secretary to the committee and she is upstairs working, Miss Ada Lenz.

And we have our chief clerk here, Mr. Paul McBride.

Senator HOLLAND. Mr. Chairman, there have already been two or three references to California and Florida. I think I ought to say that I have found from long years of experience that California is one of our best friends. The problems faced by the two States are similar. We try to be one of California's best friends and California and Florida agree on one thing, at least, that is, that the Nation would be terribly poor without those two fine States.

The CHAIRMAN. The motion is lost for a want of a second.

Mr. DICKINSON. Senator, I second it.

Senator HOLLAND. Mr. Chairman, the next witness we will call is also a State official, Dr. Robert O. Vernon, Florida State geologist.

STATEMENT OF ROBERT O. VERNON, FLORIDA STATE GEOLOGIST

Mr. VERNON. We, the officials and citizens of Florida who are most interested in water resources, welcome the distinguished statesmen from Washington and elsewhere.

In another capacity while the distinguished Senator and humorist from Oklahoma was Governor he also served as Chairman of the Interstate Compact Commission and I had the pleasure of serving with him for several years in that capacity.

I want to tell the Senator that here in Jacksonville we can drill artesian wells and attain flows of 10 million to 12 million gallons of water a day. Out in Oklahoma they drill wells and just get money out of them.

The CHAIRMAN. All I can say is your Senator was very kind in indicating I was continuing a precedent of humor. I notice that you are trying to start one and I think doing a wonderful job of it.

Mr. VERNON. Senator, we have a number of State agencies in Florida who are concerned with water resources, the State board of health being interested in the health situation, the game and fresh water fish in so far as their responsibilities carry, the salt water fish commission in salt waters, the University of Florida in various facets of soil and in soil waters, the meteorology department in both universities insofar as climate is concerned.

The water resources department was created to coordinate these studies and to enter the field of water management.

The Florida Geological Survey is charged by the legislature with the responsibility of making studies of the State's water and mineral resources, collecting data and publishing on these.

Insofar as water resources are concerned, the survey has published resource data since its origin in 1907 and one section of this department is engaged in active studies of water and geology today. The survey is the principal State agency that cooperates and coordinates water resource studies in Florida made by the U.S. Geological Survey, whereby we provide one-half of the necessary funds for that purpose.

More than 55 titles covering the area—water resources studies—by the Florida and U.S. Geological Survey have been published in regular publications of the Florida survey. Two copies of the list of publications of the Florida Geological Survey are being filed with the Senate select committee.

The proposed 1959–61 program for water studies in Florida and a record of the past program is contained in the Florida Geological Survey's Thirteenth Biennial Report, pages 20, 21, 47–49 and 59. I am pleased to file with the committee two copies of this report and additional copies can be made available upon request.

You have also received copies of this report through Mr. Wakefield's previously submitted report.

Florida does stand at the top in the Nation of 50 States in water resources, having a high annual rainfall near 52 inches. These resources, contained in 50 major stream basins, uncounted thousands of lakes, the number having been estimated at more than 30,000, and includes the largest fresh water lake contained within the boundaries of one State, and in the Florida aquifer, one of the most prolific and widespread aquifers in the world.

Our problem is one of water management and distribution, of giving the water to the place at the time it is needed.

The improvement of the controls on these resources is expensive and the Florida Legislature recognized its responsibilities in these matters by having funds appropriated with which appraisals of some of our water basins could be undertaken.

The Florida survey is, having made four feasibility studies in Peace, Suwannee and Contoohatchee river basins and of the Sanford-Traswell Canal, a link to the Cross-Florida Barge Canal, an authorized project of Congress, the State is hopeful that sufficient details will be developed to encourage further State, local and Federal investment in improving waterways in these basins and combine these with all other water improvements in adjacent States and in Florida.

I would caution the Congress in tying the issue of water resources solely to physical improvements only. All facets of the problem would include the cleaning of basin data and relating these to physical improvements and studying their results on the water resources in the field of water management and the effects of these structures on the natural balance of game, fish, sedimentation, beach erosion and other facets.

The CHAIRMAN. While you have paused there, I was tremendously interested in your statement about the enormous flow of fresh water available in artesian wells. That is in this area?

Mr. VERNON. That is in the Jacksonville area; yes, sir.

The CHAIRMAN. Where we are now.

Mr. VERNON. We have the record flow here of some of them.

The CHAIRMAN. How much of the State is underlaid with aquifers of fresh water that produce in substantial quantities?

Mr. VERNON. The Florida aquifer is composed of very porous, widespread limestone that goes to depths of several thousand feet and is in some areas exposed to land surface. This limestone is filled with fresh water—underneath South Carolina, parts of Georgia, parts of Alabama, all of Florida, with the exception of probably the westernmost part.

The CHAIRMAN. What about the keys area?

Mr. VERNON. In the keys area we still have the artesian aquifer but the waters in it are slightly brackish and are not usable for human consumption. They must go to more shallow aquifers of even more higher permeability along the coastal areas, the Miami and Miami-Hewlett, the Tamiami limestone, what has been termed the Biscayne aquifer, is probably one of the most porous aquifers in the world. It is in some case like pumping out of an open reservoir and have almost no drawdown at 10,000 gallons, 10 million gallons of water.

The CHAIRMAN. I will tell you this. In my judgment that will be worth a lot more to this State in the future than the oil resources of any State will be worth to the respective State.

Mr. VERNON. Yes, sir; but it would be very convenient to have a greasy feel between your money.

The CHAIRMAN. You know, in establishing the ascendancy in many fields—after all this is a Union of 50 States—I am sure that you are quite happy in the knowledge that other States have some advantages and things to be said in their behalf.

Mr. VERNON. Senator, we would welcome you to make all the money you can so long as you spend it in Florida.

The CHAIRMAN. Now your people have been so kind to me they will not let me spend it.

Senator HOLLAND. May I ask a question?

The CHAIRMAN. Go ahead.

Senator HOLLAND. Dr. Vernon, the development of the keys areas requires the transportation of fresh water from the mainland of the peninsula to those keys, does it not?

Mr. VERNON. For the most part; yes, sir.

Senator HOLLAND. Is it not true also that one of the main objectives in the central and southern Florida flood-control program is to furnish a greater pressure of fresh water to repel the salt water that came in through the porous limestone, came in to the degree that it forced back the water wells that supply the great urban area of Miami and surrounding cities and that threatens to force them back still further unless the program is effective in producing greater fresh water pressure?

Mr. VERNON. Yes, sir; the large conservancy districts that they have established there will provide water for several purposes. Of course, for drought and for the release of these waters into the aquifers as recharge to provide additional water to these coastal areas and to assist in flushing out some of these salt waters that have contaminated the aquifer along the coastal areas.

Senator HOLLAND. One of the main purposes of the central and southern Florida project is to prevent further intrusion of salt water into the subterranean rock aquifers and to even repel some of the salt water that has already intruded, is that right?

Mr. VERNON. Yes, sir. The application of good water management practices will have that effect.

The old program of developing a drainage of the Everglades area which used to be covered with sheet water which moved rather slowly toward the coast and is being drained off for agricultural purposes was found to be very damaging to the soils because of the very high rates of oxidation and the application of good water management

policies will hold these waters underneath those soils at levels near the ground which will still allow tillage but will not cause the excess oxidation in those soils.

Then the canals themselves have been equipped with salt water gates which allow the boats to use them through those gates but which in effect keeps the salt water out of the lower portions of the drainage canals and the subsequent intrusion of the ground water along the sides of the canal.

Senator Young. Let me ask this question. How deep is your average artesian well?

Mr. VERNON. It would be pretty hard to say, sir. In the western part of the peninsula where the limestone is exposed at the surface you may get flows almost immediately. The deeper you go the stronger the flow you get. These are in discharge areas. But in areas like in Jacksonville, we have artesian wells which are still fresh at about 2,260 feet. The water levels here originally were 60 feet above sea level. In some areas, of course, with heavy withdrawals they have been reduced to something like 100 feet below sea level but they have a very effective seal that prevents the salt water from moving down into the aquifer. At least it has been effective up to date. Continued heavy pumping, however, in these deep wells will undoubtedly cause some movement and we are hopeful we can take a very rapid reappraisal of this area to try to determine just what the effects of this heavy pumping have been in recent years.

Senator HOLLAND. How much pressure do some of these wells have?

Mr. VERNON. Some of them 60 feet above sea level originally. I suppose in these areas you still get 50 feet above sea level. Of course, an artesian in a recharge area like in the Polk County region, these water levels are 120 feet above sea level. There, though, it is a recharge area and the water is getting into the formations and moving out under the aqueclude into coastal areas and into areas of discharge.

Then in anticipation of our needs in the State the present coordinated program of water resources in the amount of about $750,000 will be expanded in the future, the Florida legislature being willing.

This expansion will allow the State to develop statewide data rather than the more usual troubleshooting which we have been doing in the past. We hope to expand the automatic water level recorder program and have drilled on roads rights-of-way a number of wells in which recorders can be permanently installed so there will be no interruption of our well records.

An increase in National and State studies of the quality of water is needed particularly to the extent that this program can be applied to monitoring for nuclear contamination. In Florida the use of large quantities of artesian water has developed a problem in some areas of increasing seriousness to the farmer. Waters containing low concentration of solids in solution may drain to low surface areas and chemical residuals from evaporation may concentrate and make the soils barren. The flushing of these brines may gradually increase the percentage of salts leaving the drainage basin to the detriment of other uses. Likewise, effects of disposable industrial waste and increased water use in air conditioning and industrial cooling is a serious threat to some of the State's water resources. Industrial waste may alter the characteristics of water resources by addition of chemicals

and heat resulting in excessive mineralization of water, excessive taste and smell, corrosive waters, high color and high temperature, rendering these waters useless for air conditioning and many cases limited use for human consumption. Temperature of water is controlled naturally by the depth of the source of the water, the mean average temperature and chemical activity. The temperature of shallow wells, particularly those near lakes, varies greatly throughout the year but waters from wells 100 to 150 feet deep approximate the mean annual temperature and the temperature of this water increases about 1 degree from 60 feet or 100 feet of the hole. In some areas ground waters naturally salty or high in radioactive elements may have a temperature above the average, such as warm salt springs and ground waters and well waters penetrating generally in the Sarasota and Manatee area, inevitably an atomic energy project develops a variety of radioactive waste which must be safely disposed of as expeditiously and cheaply as possible. The rapidly expanding nuclear program has resulted in rapidly expanding numbers of plants and laboratories and only recently has some thought been given to the disposal of the waste. Disposal problems must be considered during the early stages of planning to prevent the possibility of waste of considerable land, food, and water resources.

The volume and type of radioactive materials produced at powerplants may differ from that of fuel reprocessing plants but even they create a problem sufficiently great to influence their location.

Fuel reprocessing plants will probably not be suitable for placement in Florida but powerplants are already being planned and reactor units at both universities are under construction. It is impossible to have nuclear power without producing wastes and even with careful handling accidents have and will occur. The degree of damage resulting from such accidents are governed by the care taken in choosing the site, based on the study of the geology and geography leading to a method of containment and disposal of such waste.

Reasonable rules and regulations need to be established at the State level to insure that nuclear sites are selected only after adequate geologic, hydrologic, and geographic studies have been completed.

I would appeal to the Congress for an adoption of an integrated, coordinated waterways development program in Florida. The tidal program proposed for Florida is only a percent of the national budget for waterway development. The Nation and in particular the gulf coast and the Mississippi Valley States stand to benefit greatly from the completion of the coordinated waterways in Florida.

Because of the prolific, porous limestone aquifers of Florida, the construction of any lockages in Florida along waterways would be a step toward water, fish, and game management. We have a very unusual situation in Florida, Senator Kerr, in that most of our streams are spring fed and they carry very little sediment. Only the Apalachicola, and certain tributaries carry significant amounts of sediment and siltation solution along the bottom. For the most part, our streams are clear. They carry almost nothing except that in solution and consisting mostly of organic acids and dissolved limestone and so that our siltation problems behind these lockages would be almost negligible. The maintenance of these waterways would be very small.

Conservation of water would be gained through reduction of leakage from the aquifers and through the creation of lakes behind the locks.

In the case of the proposed barge canal the minimum water stage will store more than 150,000 acre-feet of water which is available for water, fish and game management of lock spillages.

Thank you, sir.

The CHAIRMAN. Thank you very much, Dr. Vernon.

Senator HOLLAND. I want to ask you one more question there. You are indicating with reference to your comment on the Florida cross-State barge canal that the locks there would cause the storage of waters which would be helpful rather than hurtful?

Mr. VERNON. Yes, sir.

Senator HOLLAND. In the water problems solutions here in this State?

Mr. VERNON. It could be managed to conserve water rather than to waste it and the lock and waterways plan are equipped with pumps to regain any water that is lost from lockage spillage in the summit area. For the most part the area east of the Silver Springs lock is along natural channels where the water level is maintained at slightly higher elevations than they are now. For the area west of the English lock they are also along natural channels. There the water is allowed to assume its own level.

Senator HOLLAND. These benefits coming from water control and storage by the locks comprise the principal reason why your department now strongly supports that canal rather than oppose it as you did when it was conceived as a sea level canal?

Mr. VERNON. Yes, sir, that is right. We felt that the construction of a sea level canal would do very serious damage to our water supply and that the construction of a lock barge canal or lock ship canal for that matter would not change that situation materially and could be controlled so that it worked toward conservation.

Senator HOLLAND. It would be helpful rather than hurtful?

Mr. VERNON. That is right.

Senator HOLLAND. Thank you, Dr. Vernon.

Mr. A. D. Aldrich, director, Florida Game and Fresh Water Fish Commission.

STATEMENT OF A. D. ALDRICH, DIRECTOR, FLORIDA GAME AND FRESH WATER FISH COMMISSION

Mr. ALDRICH. Senator Holland, Mr. Chairman, in the interest of time I wish to say that I have prepared a statement for the record and will therefore read only a brief outline of our position in the field of water resources.

Senator HOLLAND. Just a moment, Mr. Aldrich.

Mr. Chairman, did I understand that the full statement will be a part of the record?

The CHAIRMAN. The full statement of each report will be made a part of the record.

Mr. ALDRICH. Mr. Chairman and members of the committee, I am A. D. Aldrich, director of the Florida Game and Fresh Water Fish Commission.

I must emphasize again that the recreational benefits resulting from the general use of the surface waters of Florida constitute a major item in the overall economy of the State, and Senator Kerr, I hope that your committee and yourself will stay in Florida and avail yourselves of some of the recreational facilities. We feel that more people, a larger percentage of people are attracted to Florida because of the recreational benefits connected with our water resources, we think even more so than California. We hope that you will stay long enough to get the good concept of the monetary value of a few days of recreation in Florida.

The CHAIRMAN. Did you say the monetary value to Florida?

Mr. ALDRICH. That is right; yes, sir. We like to keep Florida green.

We are primarily interested in reviewing all plans for water projects to insure protection or enhancement of fish and game and other recreational features involved.

Senator HOLLAND. If you will yield right there, Mr. Aldrich, it is true, is it not, that the gasoline used to propel the sport boats is not manufactured in Florida?

Mr. ALDRICH. A good deal of it comes also from Oklahoma.

Senator HOLLAND. Is it true also that the reels, rods, the lines and the other equipment, in large measure, including the automobiles which carry you to the boat's side, and all those things, come from all the States?

Mr. ALDRICH. That is right.

Senator HOLLAND. And that all the Nation benefits from the immense recreational potentials here in Florida?

Mr. ALDRICH. Very definitely. We think that the recreational opportunity in Florida contributes immeasurably to the economy of the Nation.

Senator HOLLAND. Thank you. I wanted it in the record.

Mr. ALDRICH. We confirm that by the out-of-State license tags that you will notice, Senator, while you are in our State.

The CHAIRMAN. I am going to find out what an out-of-State fishing license costs.

Mr. ALDRICH. Good.

Senator HOLLAND. May I state that I hope the fresh water fish commission issues an honorary license to the Senator from Oklahoma and the Senator from North Dakota. If it cannot be honorary just send me the bill.

Mr. ALDRICH. Thank you, sir. He is indeed a colleague, Senator Kerr.

I also wish to say that Spencer Smith of the Atlanta office of river basin studies, U.S. Fish and Wildlife Service is present. Mr. Smith will undoubtedly answer any questions your committee members may wish to ask relative to the interest of the Service in these matters before the commission.

By now you gentlemen have visited most of the regions of the country, have heard reams of testimony, and have spent hours at the conference table. And by now you have undoubtedly arrived at some general conclusions regarding continental needs and desires as based on such cross-section of opinions and presentments. Therefore, we shall not labor you in detail. In fact, your committee has already received a statement from our department of water resources which

aptly summarizes the general situation in the State of Florida. Thus, it is our desire at this time to focus attention only on certain facets peculiar to the interest of the Florida Game and Fresh Water Fish Commission.

As you may already know, our commission came into being on January 1, 1943, as the result of a public referendum and at that time we were given the responsibility of preserving Florida's fish and wildlife resource and its habitat while simultaneously providing for public enjoyment of these natural assets through proper management and provision of usage facilities. We feel that this responsibility has been successfully assumed and that our program of conservation is sound and progressive. At the same time, we are continually being made more aware of certain trends which give rise to acute alarm. We make reference to the situation in which higher individual income, additional leisure time through shorter workweeks, and booming populations (particularly here in Florida) have resulted in accelerated demands for outdoor recreation while conversely the affected natural resources are dwindling under the impact of urban and industrial expansion. And, unfortunately, water is quite often the focal point of both the recreation seeker and the industrial user. Your committee is obviously aware of these implications, yet it is extremely difficult not to mention this situation over and over again.

Game and fish agencies the country over have various problems pertaining to their own backyards, yet, universally, they have water problems. The International Association of Game, Fish, and Conservation Commissioners is acutely aware of this, and as recent president of this organization I can say that we appreciate the understanding shown and the actions taken at your 85th and 86th Congresses to bring about certain new and corrective legislation. After all, it is only through the enactment of needed legislation that water conservation and its dependent fish and wildlife resources can be properly and adequately considered and administered. In view of this unvarnished statement, permit me to but briefly mention some of your legislation which we in Florida find to offer great promise for outdoor-minded taxpayers.

First, let me make reference to the Fish and Wildlife Coordination Act. This fine piece of legislation is of inestimable value to us in Florida, particularly in view of the large number of civil works projects proposed by the Department of the Army for application to the countless lakes, streams, and watersheds of this State. Under this amended act, fish and wildlife values can now be planned into these water development and control projects and we fully plan to utilize this opportunity.

Secondly, we are pleased that the Watershed Protection and Flood Prevention Act was amended to provide for Federal cost sharing on fish and wildlife developments built into such projects.

Thirdly, we are pleased with the new Federal Boating Act which is now stimulating uniform State legislative action in the field of water safety.

And, fourthly, we are happy to note that measures are now being taken to increase the municipal sewage treatment works construction grants program under provisions of the Federal Water Pollution Control Act of 1956.

We believe that conscientious adherence to these four programs will give wildlife and recreation interests a fair stake. The Fish and Wildlife Coordination Act provides legal and administrative consideration of our interests in the primary lakes, streams, and waterways affected by Federal civil works and private projects. The Watershed Protection and Flood Prevention Act will carry these considerations into the secondary watershed construction features. The Pollution Control Act will help keep our water clean, sanitary, and productive. And the Federal Boating Act will regulate and promote safety in the usage of our waterways.

Gentlemen, if these four programs can be carried out in the spirit and in the manner by which they were sponsored, endorsed, and intended, the Florida Game and Fresh Water Fish Commission will be most pleased.

I thank you.

Senator HOLLAND. Senator Young, do you have questions?

Senator YOUNG. No.

Senator HOLLAND. Thank you, Mr. Aldrich.

(The statement referred to follows:)

STATEMENT OF A. D. ALDRICH, DIRECTOR, FLORIDA GAME AND FRESH WATER FISH COMMISSION

AN EVALUATION OF RECREATIONAL USAGE OF SURFACE WATER IN FLORIDA

Webster's description of Florida is geographic in nature. However, in actuality, there are many synonyms, i.e., vacation, recreation, fishing, and hunting. The value of surface water to Florida in terms of these synonyms is almost beyond comprehension.

A quick look at some population statistics for a 10-year period from 1940 to 1950 will help one envision the outstanding growth Florida has experienced, and consequently, the utilization of our surface waters.

The population of Florida in 1940 was 1,897,414;[1] in 1950 the population was 2,771,305,[1] an increase of 46.1 percent. In 1955, the unofficial count was more than 3 million, and if the "move to Florida" trend continues at the same rate, the 1960 population will be approximately 4 million, and over 5 million by 1970. Tourists swelled the permanent population by 5,460,000[2] persons in 1955, and they spent $1,080 million. This is an increase of 260,000 people and $20 million over 1954 and an increase of 360,000 people and $150 million over the 1953 figures. Without question, recreation is big business in Florida.

The number of people in Florida is not the only factor that has increased. For instance, the economic situation was making tremendous strides in the period from 1940 to 1950. The median income for men in metropolitan areas in 1940 was $662,[1] whereas in 1950 the income was $2,025[1] per man.

We are accustomed to think in terms of a 40-hour workweek, but large segments of industry have already reduced or are contemplating a reduction of the workweek to 35 hours.

There is no question that if present trends of greater population, more money per capita, and more leisure continues, much heavier pressure will be placed on recreation facilities by permanent residents as well as the ever-increasing number of tourists.

The potential utilization of surface water is almost beyond comprehension. For example, sport fishing alone is calculated to increase at a rate of 3.4 million per year, i.e., by 1960 the calculated value will be $165 million and by 1970 the value will be an astronomical $236 million.

Fish and game utilization values of surface water compare very favorably with agriculture values in 1955. For example, the value of agricultural production[3] for field crops was $447,910,000 and the total livestock and poultry production was valued at $135,389,000 for 1955.

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[1] U.S. Department of Commerce, "Census of Population, 1950," pt. 10.
[2] Florida Development Commission.
[3] U.S. Department of Agriculture and Agricultural Marketing Service and Florida Marketing Service.

The overall value of recreational uses of water in Florida has been documented in the consolidated statement to your committee by the Florida Department of Water Resources so needs not be reiterated here. We believe however, that a discussion of just one facet or one set of these figures would provide an interesting insight of the values involved and have taken the outboard boating industry as an example, as follows:

OUTBOARD BOATING INDUSTRY

The importance of Florida surface water to the outboard boating industry is profound and its importance to the economy of Florida through many small businessmen is astonishing.

Through statistics furnished by the Outboard Boating Club of America it has been found that of all the outboard motors and boats sold in America approximately 10 percent of the sales were in Florida. The percentage figure varies from year to year; and the 10-percent figure used in this report is an average. Table 1 shows the comparison of Florida sales to the national figure in 1955.

Table 1

	United States	*Florida*
Outboard motor sales	507, 000	50, 070
Outboard motors in use	[1] 4, 210, 000	421, 000
Outboard boats sold	258, 000	25, 700
Boat trailers sold	129, 000	12, 900
Dollar value of outboard motor sales	151, 000, 000	15, 100, 000
Dollar value of outboard boat sales		11, 565, 000
Dollar value of outboard boat trailer sales		2, 386, 500
Dollar value of outboard motor fuel used	68, 000, 000	680, 000
Total dollar value sales		27, 731, 500

[1] This is a total of the outboard motors sold from 1947 to 1955. The OBA apparently has taken into consideration the outboard motors discarded or traded-in on newer models, i.e., in 1953 there were 3,419,000 motors in use; there were 430,000 motors sold in 1954 which through straight addition would be 3,849,000 motors in use in 1954. However, the OBA lists 3,740,000 motors in use in 1954, a difference of 109,000 outboard motors.

REASONS FOR BUYING OUTBOARD BOATING EQUIPMENT IN FLORIDA

The Outdoor Boating Club of America breaks the various phases of recreational utilization of surface water down in the following manner:

[In percent]

Item	1953	1954	1955
Fishing	81.7	79.0	76.8
Cruising	7.0	8.8	11.2
Hunting	7.7	8.2	6.4
Water skiing	2.4	2.2	3.0
Other	1.2	1.8	2.6

It is interesting to note that in 2 years cruising, which is usually a family enterprise, has increased 4.2 percent. This is significant also in that this sport usually requires or is done in cruiser-type boats powered by large outboard motors. For instance, in 1953, 22.4 percent of the outboard motors sold in Florida were above 12 horsepower in size. In 1955, 43.2 percent of the motors sold in Florida were above 12 horsepower.

From table 1, there were 421,000 outboard motors in use in Florida in 1955. Using this figure, and applying the percentage of use for various phases from above, the number of outboard motors and boats used in each sport is as follows for 1955:

Fishing	323, 328
Cruising	47, 152
Hunting	26, 944
Water skiing	12, 630
Other	10, 946

These are total figures and include both fresh- and salt-water usage. Although there is no feasible manner by which fresh-water figures can be presented individually, certainly a large majority of the outboard motors and boats are used primarily in fresh water. Small outboard boats are not generally suitable for salt-water fishing except in protected areas; also, fresh-water fish camps, of which there are 879 in number, have a large majority of outboard motors available for rental along with their 8,771 rental boats.

The ever-increasing popularity of boat-a-cades is limited almost exclusively to fresh water. Likewise, with water skiing, unless a salt-water area is well protected and calm, it is not a desirable location for water skiing.

Thus, it is apparent that surface water utilization by recreational and commercial interests is one of Florida's most important businesses. In a geographic and climatic location such as we have where the State name and recreation are synonymous words one can only conclude that if these values are properly administered the future potential is unlimited. Therefore, we are delighted that your committee is now taking the initial steps toward establishing a long-range water resources policy to perpetuate and enhance these great values.

Senator HOLLAND. The next State witness, Mr. David B. Lee, director of the Bureau of Sanitary Engineering of the Florida State Board of Health.

STATEMENT OF DAVID B. LEE, DIRECTOR, BUREAU OF SANITARY ENGINEERING, FLORIDA STATE BOARD OF HEALTH

Mr. LEE. Mr. Chairman, Senator Holland, Senator Young, Congressman Bennett, before I give my testimony may I enter for the record two statements by Mr. Arthur N. Beck, technical secretary for the State of Alabama Water Improvement Commission at the meeting, also another statement by Mr. Beck as chairman of the Congress of State Sanitary Engineers.

He could not be here and he asked with your permission if they may be entered in the record.

The CHAIRMAN. They will be included in the record.

(The prepared statements follow:)

STATEMENT OF ARTHUR N. BECK, TECHNICAL SECRETARY, STATE OF ALABAMA WATER IMPROVEMENT COMMISSION

Mr. Chairman and members of the committee, I am Arthur N. Beck, technical secretary, State of Alabama Water Improvement Commission. I am also chief engineer and director, Bureau of Sanitation, State of Alabama Department of Public Health. I wish to express my appreciation for the privilege of presenting the views of the water improvement commission and State department of health on the problems of water resources in this Nation.

The water improvement commission and State department of health have as their paramount interest the preservation of water quality and the development of Alabama's water resources to the best interest of the general public.

The Alabama Water Improvement Commission was created in 1947 by a legislative act for the express purpose of performing a comprehensive study of pollution in waters of the State. This study was completed in 1949, and a detailed report entitled "Studies of Pollution in Streams of Alabama" prepared for the State legislature and general distribution. This report includes data collected over a period of 2 years from 854 sampling points established on the waters of State. During this study a total of 57,034 laboratory determinations were made on 7,537 samples. This work and report established a baseline of conditions in the State's waters on which programs of water quality preservation could be based.

In 1949, the State legislature, through an amendment to the law creating the water improvement commission, empowered this commission with authority to control all new sources of pollution created since August 25, 1949, and those sources of pollution existing prior to that date which create health hazards. It is also the duty of the commission to conduct surveys with respect to the pollu-

tion of any waters in the State, and it is empowered to establish standards for recognized limits of pollution. The commission may also establish standards for water quality as related to the reasonable and necessary use of the State's waters in the public interest. In establishing standards of quality, the commission shall recognize that because of varied factors and varied use of waters, no single standard of treatment and no single standard of quality are practical and that the degree of treatment of sewage and industrial wastes must take into account the present and future uses and general policies relating to existing or proposed future pollution which are necessary to accomplish the purposes of the act under which the commission operates.

The commission issues permits after examining applications, plans, and specifications for the discharge of sewage, industrial wastes, or other wastes into waters of the State. Each permit specifies the conditions under which the discharge is permitted. New pollution or an increase in the quantity of pollution may not be discharged subsequent to August 25, 1949, without a permit from the commission. It is our opinion that the State of Alabama Water Improvement Commission has the necessary authority to control pollution of the State's waters.

On the whole, the streams of Alabama are relatively clean. There are some instances of local pollution from sewage and industrial wastes resulting in adverse conditions of limited extent.

The public's concern over water pollution and a desire to preserve and improve the quality of Alabama's waters has become a dominant factor in the correction and prevention of pollution problems. This interest, developing gradually over the years, has reached the point where it influences and motivates municipal officials and industrial management to take action in the improvement of sewage and industrial waste control.

The programs authorized by the Federal Water Pollution Control Act of 1956 provide a foundation for the solution of pollution problems. The Federal construction grant program for municipal sewerage improvements has greatly stimulated interest in the provision of adequate sewage-treatment facilities and has been responsible for considerable progress in this field. We recommend the continuation of appropriations for grants for construction of sewage-treatment works and increased assistance to municipalities as would be provided through passage of H.R. 3610. We also recommend that the Congress extend the provisions of section 5 of the Water Pollution Control Act, which authorizes grants to State water pollution control agencies to support State programs for the prevention and control of pollution. The provision for these grants will expire June 30, 1961, unless it is extended by the Congress. Grants to States have made possible the expansion of technical investigations and pollution-abatement services. With the assistance provided by Federal grants to Alabama, our commission has completed a cooperative study with the U.S. Geological Survey on low flows in Alabama streams. Our commission has also prepared a brochure on its activities for distribution.

In the matter of river developments for the purposes of power and navigation, we feel that water quality should be given its rightful place and that the construction of these improvements should recognize the potential of the development and provide for its ultimate use in the best interests of the public. Developments are now in progress which will open up a vast water surface area on which recreational activities will be foremost in the minds of the local citizenry. These recreational potentials will be restricted in areas adjacent to the larger municipalities unless provisions are made to effectively treat sewage and other wastes discharged into the streams. We recommend that water quality be built into all impoundments, no matter what the original purpose.

On the matter of domestic water supply and water supplies for industrial users, the assurance of an adequate supply of water for human consumption and for industries is of utmost importance. We must manage our water resources and develop plans for their use which will assure an adequate supply of usable water for all purposes. The U.S. Public Health Service has been active in the field of water quality control and has the authority to cooperate with the States on matters relating to research and investigations on water quality as it pertains to the public health. We recommend that the U.S. Public Health Service also be given the authority to cooperate with the States in the development and the use of water resources so that adequate quantities for domestic, industrial, and all other purposes will be available.

The 1950 population of Alabama was 3,061,743. It is estimated that the 1980 population of the State will be approximately 3,750,000. Although the estimated urban population of 1980 will be double that of 1950 we do not anticipate the development of serious shortages of water supply for either domestic or industrial purposes. However, local situations may develop that may cause a greater expenditure for the development of water supply. We believe that the authority given to the State water improvement commission is adequate to prevent detrimental effects to the quality of the State's water resources.

The 1959 State Legislature of Alabama created a water resources study commission. The activity of this commission will be limited during the next 2 years by the lack of funds for operation. On the other hand, a step in the proper direction has been taken and we feel that sufficient appropriations will be forthcoming in the future which will permit this commission to develop plans for the management and use of Alabama's water resources.

In summary, we recommend that the committee support the Federal programs for financial aid to State pollution control agencies and to municipalities for the construction of sewage treatment works. We also recommend that the committee recognize the need for research in the fields of water quality and sewage and industrial waste treatment and support movements in the direction of research expansion. It is respectfully requested that the committee consider the propriety of authorizing the U.S. Public Health Service to cooperate with States in planning the development and use of water resources.

STATEMENT OF ARTHUR N. BECK, CHAIRMAN, CONFERENCE OF STATE SANITARY ENGINEERS

Mr. Chairman and members of the committee, I am Arthur N. Beck, State sanitary engineer of Alabama and technical secretary of the Alabama Water Improvement Commission. As chairman of the Conference of State Sanitary Engineers, I appreciate the opportunity of presenting to this committee a statement of the conference's views on water resources problems. The Conference of State Sanitary Engineers is composed of the chief sanitary engineers of the 50 States and the territories. We are interested and responsible for the control of environmental factors that may affect the health and well-being of the people of this Nation. Two of our most important activities which are of particular concern to this committee are those of water supply and water pollution control.

The United States is faced with a fixed supply of water. The availability of this water depends on control measures applied to its quality and quantity.

Water use for all purposes is increasing rapidly—from 150 to 160 billion gallons per day in 1945 to 270 billion in 1957, and an estimated 600 billion gallons daily in 1980. Explosive population growth and higher living standards are multiplying demands on public water supplies. In the eastern States, supplemental irrigation practices are rapidly expanding and the recreational use of streams, lakes, and reservoirs is growing phenomenally. For example, on Corps of Engineers reservoirs alone, recreational use increased from 5 million visitor-days in 1946 to over 95 million last year.

Industry, and particularly water-using industry, presents a prime example of burgeoning water use, and Fortune (December 1959) estimates a 60-percent expansion of industrial production during the 1960's.

This, then, brings us to the crux of the problem. Each use I have mentioned—and this is certainly not an exhaustive treatment—adds something to the water. Each use affects the quality of the water and each reuse adds more pollutants. Uncontrolled water use and reuse damages water quality to such a degree that legitimate uses down stream are seriously hurt, if not completely destroyed.

Water quality control and management is the solution of this problem. The era has been entered where quality conservation has high priority in supplying our present and future water needs. If our water resources are going to support the Nation's continued world leadership, adequate pollution control measures must be developed and maintained. To do this requires enlightened, informed leadership at all levels of government as well as public support.

Much has been done in water quality management during recent years. But much more remains to be done. While no major waterborne outbreaks of disease have occurred in many years, industrial expansion and technical progress are outdistancing our ability to adequately manage pollution. The problems of yesterday—bacteria and natural organic pollution—are giving way with increas-

ing acceleration to concerns over new chemicals, new material used in our daily living and in industry, and with the rapidly expanding utilization of nuclear energy for peaceful pursuits. As an example of what we may expect, Fortune estimates a 125-percent increase in chemical production by 1970, as contrasted with 60 percent for industry as a whole.

What are our major problems? What is needed to cope with the future?

We are concerned with three major areas of action:

(1) A continued, expanded attack on the provision of adequate waste treatment for our growing urban areas and for industry.

(2) An expansion of services within State regulatory agencies.

(3) The need for a vastly increased research effort to solve present complex problems as well as those developing in the foreseeable future.

Last year, municipal sewage treatment construction was $390 million, the highest in history. However, this is still short—substantially short—of the need of $500 to $600 million annually for such construction. The assistance provided by the construction grant features of the Federal Water Pollution Control Act (Public Law 84–660) has greatly stimulated interest in providing adequate sewage treatment.

We recommend the continuation of Federal appropriations for these grants and increased assistance to municipalities as would be provided through passage of H.R. 3610 (the Blatnik bill).

The President's Water Pollution Control Advisory Board has recommended that the Federal Government provide financial incentives which would stimulate industry to accelerate its construction of adequate waste-treatment facilities. The conference urges that a detailed study be made at the policymaking level of methods by which industry may assume its rightful place in reducing pollution of our Nation's waters.

Recent estimates indicate the need of doubling current expenditures in State regulatory agencies within the next few years for carrying out responsibilities for management of water quality. At present, only $8.5 million (of which $3 million are Federal funds) are spent annually. We feel that $12 million is a minimum to satisfy even present responsibilities, let alone cope with the future.

To aid in meeting these needs, we recommend that the Congress take action to continue the authorization for an annual appropriation of Federal funds for grants to State water pollution control programs beyond fiscal year 1961. This will stimulate the current trend of increasing State expenditures for water quality conservation activities.

Perhaps the greatest single need in the field of water quality management is to close the gap between our technological progress in the production of consumer goods and services and the effects that such processes and materials have on our water resources. The need for scientific knowledge to define the behavior of new contaminants, their effects on man and his environment, and for developing adequate management methods is urgent and vital. It is most real in the sense that delay increases the problem of control.

We therefore recommend that immediate, positive action be taken to expand research, both basic and applied, in the field of water quality management. Authorities have suggested recently that the sum of $40 million annually would be conservative for research in this field, as contrasted with the $6 to $8 million being spent today. We feel that sufficient authorization is presently available to the U.S. Public Health Service for such expansion, and that implementation awaits only appropriations and legislative direction.

We urge that this committee and the Congress take positive action toward assuring these objectives.

Mr. LEE. I am David B. Lee, director of the Bureau of Sanitary Engineering, Florida State Board of Health, Jacksonville, Fla.

I wish to express our deep appreciation to your committee for granting us the privilege of presenting to you our views of the water resources so essential to the continued welfare of Florida and of the Nation as a whole.

The Florida State Board of Health is charged by law (chs. 381 and 387, Florida Statutes) for the supervision of water supply, distribution and sewage collection, treatment and disposal of all systems serving 25 or more people.

These statutes give us the responsibility as to the adequacy, sanitary and physical conditions of these activities insofar as public health is concerned.

Florida, as many of you know, is the land of sunshine and water, and I might say for the benefit of the Californians here today that we deleted the sunshine temporarily so they would feel at home.

We have something like 30,000 lakes, thousands of miles of ocean, gulf, and bay frontage, and hundreds of miles of rivers and streams, and today many, many new areas are being man made so that there will be more waterfront property. In addition to this we have an unlimited supply of water from underground sources. Many millions of gallons flow daily from our springs, and it is estimated that about 90 percent of all the domestic water used in the State of Florida comes from underground sources or wells. We would leave to others the data on water used by industry. As has already been stated, Florida has an average rainfall of about 55 inches and this year, 1959, will be called the wet year. We have had to date something like 70 to 90 inches scattered throughout the State and at the moment we do have adequate water resources.

It has been estimated by other agencies that Florida's major industry is tourism and that there is an average of over $1 billion a year spent in this State by our visiting friends. It is academic in our opinion as to why they come to Florida—sunshine and water—and I am sure that many of the other agencies who will testify here today will document the various investments of sports fishing, commercial fishing, swimming, boating, and all the recreational activities that go on in the State of Florida. I would like for the record to point out that water is the second most essential commodity to human life, air being first; and a good, safe potable water is something that is needed for all of the water resource team. This water resource team as we review it in Florida consists of the municipal and public agencies that require good water for domestic use and they also require water to discharge their treated waste into. The industrial users of water which often treat their water better than we do for human consumption; the industrial waste people interested in the water to discharge their waste into; fishing and wildlife groups, nature lovers; agriculturists; cattle people, the power industry, the shipping industry—all of these people are vitally interested in the water resources. The quality of the water is the one factor that cuts across and is common to the interest of all users.

In the State of Florida it is estimated that today we have a total permanent population (or resident population) approaching 5 million people. While few experts have thus far reached as high, the Bureau of Sanitary Engineering of the Florida State Board of Health is predicting a State population of 8½ to 10 million by January 1, 1971. It is also our prediction that at this rate of growth the municipal needs could average over 5 billion gallons of water per day by the year 2000.

In addition to the basic need of water, water quality is considered by the State board of health to be its critical water resource problem. We have highly mineralized and colored waters in many areas of the State that will handicap development of satisfactory public water supplies unless the water resources of those areas are properly de-

veloped. It is also our belief that desalinization would be a great asset if it can be done so that the water would be acceptable to taste and sufficiently economical.

Florida at the present time has something in the order of 780 public water supply systems, with a total gallonage of 520 million gallons per day. You will see marked out there the figure 1,449 millions which is the rated capacity of our present supplies which we could serve if necessary.

With the expected growth, the dynamic growth of this State, water management has become the prime problem. One of the basic needs of this State is planning and zoning, with management of its water resources serving the general public as a major objective.

Gentlemen, I would like to compliment the Congress on the action it has taken in the past on the Federal Water Pollution Control Act which is Public Law 660. This incentive program has been very beneficial to the State of Florida and we urge that this program be strengthened and expanded.

For the record we should like to enter the following data:

The Florida State Board of Health has certified to the U.S. Public Health Service 31 projects of which 15 of these projects were for towns under 2,500 people, 9 were for towns from 2,500 to 5,000, 3 were for towns from 5,000 to 10,000, 2 were for towns from 10,000 to 25,000 and 2 were for 25,000 to 50,000.

In other words, 90 percent of our certifications have been for the communities of under 25,000 which indicates that this has been an incentive program to assist the small communities. The vast majority of these towns would not have undertaken to construct their waste treatment plants at the time they did, had it not been for this incentive financing. As stated above, we urge the continued recognition to be given to safeguarding our water resources by water pollution control, that future generations may be assured of adequate public water supply and water for industrial use, recreation, scenic, fish and wildlife activities.

The use of water except for power generation damages its quality. The users raise the temperature, alter the chemical characteristics, add to the suspended sediment load or all three.

Today we are adding new industrial chemical wastes, sewage and other organic contaminants to our streams. The effects of these we are only beginning to learn. Waters are being polluted by various hydrocarbons being sprayed into the air which are absorbed into the soil and may leach into our streams. Many of our streams throughout the country are little more than open sewers. In other words, the control of the quality of water is a problem of management. The quality of stream waters will be as bad as management permits it to become or as good as management demands it shall be.

The need as I see it for the next several decades will be the efficient and effective management and control of water, and that is quality control. There will not be any new water. Water will have to be used and reused perhaps many times in certain areas.

The problems in the field of water as we see them fall in the general categories of (1) source and distribution; (2) quality control which includes biological, chemical and pollution control and the latter includes all the new exotic pollutants that we now have and which will

increase in the years to come; and (3) floods and variability of streamflow.

Not all of these problems are everywhere but there are areas that have all of them and it is going to require excellent knowledge and implementation on the part of the water planner and water manager to provide the leadership and to preserve and conserve the water resources of this State and Nation.

There is a specific item touching directly upon the possible extent and character of water resources activities, both governmental and nongovernmental, required to provide the quantity and quality of water for use by the population rapidly expanding in this State and elsewhere, which it is felt should be further explored. In the field of water supply distributed in central systems, both publicly and privately owned, for domestic purposes we find here in Florida an apparent need for improvement in the finance situation to bring the provision of water utilities up parallel with new housing construction which itself creates the demand for utilities. The home mortgage insurance programs, particularly those administered by agencies of the Federal Government, result in rapid development of areas not within feasible distance for existing utilities extension. Unfavorable environmental conditions result when multitudinous dwelling units are erected and occupied without the water and sewer utilities. Attached to this paper is a memorandum describing a situation in another State and I will not read it.

(The memorandum follows:)

STATE OF MINNESOTA, DEPARTMENT OF HEALTH,
Minneapolis, November 19, 1959.

Subject: Help! Help!

To All State Sanitary Engineers:

A year ago Dave Lee sent out a questionnaire asking about experiences with detergents in water supplies. Our reply to the questionnaire was in the negative. Today we would have quite a different answer.

Last spring a woman in a suburb of the Twin Cities called to learn what was wrong with the water from her private well. It had changed in taste and appearance and had a "head" when drawn in a glass. Our suspicion of detergent was confirmed at a little over 1 part per million. A neighbor, who had not noticed a change, had a little less than 1 part per million. Tests for nitrate nitrogen also showed an elevation above the normal for this part of the State, which is less than 1 part per million. We suggested to the municipal authorities that they might be in trouble with recirculation of sewage and that it would be a good idea to survey the situation for the whole village, comprised of some 3,300 homes with individual water supplies and soil absorption sewage disposal systems. Our results, on a statistically significant sample of all water supplies, showed 60 percent with elevated nitrate or surfactant or both, and 8 percent with nitrate over 10 parts per million.

Several other communities became alarmed and requested surveys, so that by October we had completed six surveys of communities ranging from 80 to 10,000 homes, with 83 percent of wells in one community showing surfactant and/or nitrate, and 23 percent showing nitrate above 10 parts per million. At this point the Governor became concerned and called on all of the mayors of the 70 or more cities and villages in the Twin City metropolitan area to get busy with plans for improved water and sewage facilities, preferably on a joint basis. We have now completed and reported on 15 surveys representing 32,000 homes, with results ranging from zero to 100 percent showing contamination by sewage chemicals for 53 percent of the total, and 12 percent having nitrate nitrogen over 10 parts per million.

Interest remains high and we continue to make surveys, expecting to cover most of the metropolitan suburbs, representing well over a half million people dependent upon individual water supplies or sewerage systems or both. We will

be getting some new public or central water supplies and we will probably have legislation in 1961 providing for an expanded sanitary district.

Some day we expect to write a story on this, relating findings to soil conditions, depth, and age of wells, lot sizes, and other factors. In the meantime we refuse to believe that this area is so different from others, although little has been printed on this type of experience. The Governor has asked me to learn what I can about other parts of the country.

I know that many of you have information that would be helpful to us and I would greatly appreciate learning of any findings similar to this. I don't need any great detail but I have promised some information within a month.

Yours very truly,

F. L. WOODWARD,
Director, Division of Environmental Sanitation.

Yet under the stimulus of mortgage insurance for residence construction, the reluctance to risk long-term capital for utility financing often causes a hazardous timelag if not indefinite postponement of central water and sewer facilities installation.

Perhaps a broadening of the basic concepts of governmental activities presently involving insurance of housing development financing undertaken by private enterprise should be considered.

This would envision extension of the same mortgage insurance climate to embrace the needed development of water utilities (which must in the overall include sewage facilities for protection of the water resources, and the two having been held inseparable for finance purposes by Florida Supreme Court) for the very population in the area created through stimulus by dwelling mortgage insurance in the Government programs.

The situation which is requiring water utility development in areas outside municipal corporate limits involves not only quantity but also the quality of water resources. Present-day domestic water uses dictate a high quality product; and many of the residential developments are occurring in areas where raw water quality makes treatment work necessary.

I might add in many areas where the present water quality is not suitable for domestic use, financing high first-cost treatment facilities is definitely a part of the recited need for further consideration of governmental activity in this phase of water supply for the population.

Extent of the water supply for domestic uses in relation to these circumstances is shown in a measure through review of public water supply record data of Florida State Board of Health. Of the total number of engineering plans for waterworks and systems approved by the agency in the year 1958, there were 55.4 percent of this number for realty subdivisions, outside of incorporated limits. This is almost exactly the last 5-year average (55.6 percent) of the number of water facility projects which have been approved for realty subdivisions, out of the total number of waterworks projects approved in the State.

Gentlemen, we all know that during the last hundred years we have been in the greatest industrial revolution of all time. Today we are entering into the new revolution which we are calling a technological revolution. Our technology is rapidly being changed, but while it has been reported in recent weeks that industry alone is spending $12 to $13 billion annually on research of new processes and products, while only $4 to $5 million a year are being devoted to researching the methods of controlling the waste products from these various industries, it has been carefully estimated that if our research institu-

tions could obtain merely 2 percent of the funds that are being spent on research for products and processes we could then keep up with the needed technological developments to adequately treat the waste of industry and protect the quality of our streams.

Summing up these brief observations, the Florida situation insofar as water resources are concerned shows the need for adequate planning and managing of its vast water resources so that the best and most equitable utilization may be made. The No. 1 priority should be given to water quality not only for domestic purposes but for industrial use, recreational, and all of the other basic uses. Public Law 660 should be expanded and strengthened for the incentive program of waste treatment works and also section 5 of this act should be extended, which runs out next year, and the provisions of $3 million each year as grants on a matching basis to the State water pollution control agency should be increased to $5 million.

Legal and financial methodology should be provided for assisting on a sound basis the development of adequate treatment facilities in suburban areas where the rapid growth at the present time is being felt most. This recommendation was made to the Congressman Rains Committee on Banking and Currency back in the early 1950's and is even more important today.

Adequate funds should be made available for the research necessary to develop the know-how of treating the waste products with all the new pollutants that are being evolved so that water quality may be maintained.

It is also the opinion of this agency that water quality management should be centralized at the Federal level in one agency most qualified to handle this matter, namely, the U.S. Public Health Service within the Department of Health, Education, and Welfare.

Thank you for the privilege of presenting this statement.

The CHAIRMAN. Thank you, sir.

Senator HOLLAND. May I ask you one question?

Mr. LEE. Yes, sir.

Senator HOLLAND. In your last sentence do you indicate that the present handling in the Federal-State level is not centralized?

Mr. LEE. Sometimes, Senator Holland, several agencies are dealing directly with cities and other agencies on water quality, low flow, etc. It does not come through the Public Health Service and it does not come through the State health department.

Senator HOLLAND. What are those Federal agencies?

Mr. LEE. The Department of Commerce deals directly with municipalities and other agencies and I am not sure about Interior but I think my recollection is it is on Interior. I believe the Corps of Engineers through their Interagency Committee in Washington does work through the Public Health Service on water quality.

There have been several times in the last 10 years that the health agencies have been out in left field, not knowing what is going on. I believe this is strictly water quality and not anything else.

Senator YOUNG. May I ask this question?

Do you have any State law governing the pumping of raw sewage in rivers and streams?

Mr. LEE. Yes, sir. Chapter 387 of the Florida law. No deleterious material may be deposited in the streams of water of the State of

Florida. That law was passed, I believe, in 1927. I do not know who was the father of it but he was certainly foresighted. It is one of the better State laws.

Senator YOUNG. Do you have a State program that gives assistance to the cities in developing?

Mr. LEE. No, we do not. We have no appropriation. As you have heard, several States do, but we do not. We have used this Public Law 660 to a very fine advantage and it has been very effective in Florida.

The CHAIRMAN. Were you through?

Senator YOUNG. Yes.

The CHAIRMAN. You indicated that you thought the amount of matching funds from the Federal Government should be increased. Is that on the basis of your experience in the number of applications you have?

Mr. LEE. Yes, sir, Senator.

The CHAIRMAN. Did you put into your statement—I was not here all of the time—the backlog of unmatched requests that have come to your office?

Mr. LEE. I did not put that into my statement. Every year since the inception of this program, Senator Kerr, Florida has averaged approximately $3 million worth of requests.

The CHAIRMAN. That is requests which would have called for $5 million of Federal funds?

Mr. LEE. Correct.

The CHAIRMAN. You have received on the average about $3 million?

Mr. LEE. We have received on the average about $900,000 per year based on the appropriation of $45 million per year, from section 6, Public Law 660. I might add that for every Federal dollar that has been spent in Florida on this program there has been 9 to 10 local dollars.

The CHAIRMAN. Yes. At the bottom of page 6 of your report you say "and the provisions of $3 million each year as grants on a matching basis to the State water pollution control agency should be increased to $5 million."

Mr. LEE. That is the section 5 which is the program grant money to the water pollution control agency of which the State of Florida receives approximately $53,000. That comes to the water pollution agent. Florida receives $900,000 or $899,000 now on the construction grant which is section 6 of Public Law 660.

The CHAIRMAN. I see.

Senator HOLLAND. We have used that law very effectively, Senator.

Thank you.

Senator HOLLAND. Mr. Chairman, I understand that Mr. Arthur N. Beck, the next witness, could not be here and that Mr. Lee has submitted the statement for him.

Mr. LEE. Yes, sir. He called me, Senator and said he could not.

Senator HOLLAND. The next witness listed here is Mr. Gary E. Snow, president of the Florida Association of Soil Conservation District Supervisors.

Is Mr. Snow present?

STATEMENT OF GARY E. SNOW, PRESIDENT, FLORIDA ASSOCIATION OF SOIL CONSERVATION DISTRICT SUPERVISORS

Mr. SNOW. I have a written statement that I just want to present, Senator.

We appreciate the opportunity to present our views at this hearing. We feel that the agriculture interests have an important place in the consideration of water resources for the future. It is not to be implied that this is a paramount role, but rather is a full partner with municipal, domestic, industrial, recreational, and the many other uses.

It has been estimated that 87 percent of Florida's population depends on ground water for domestic use. In addition, large amounts are used by industry and for irrigation of vegetables, fruits, and other high value farm crops. This source is generally adequate at the present but, with our rapidly increasing population, we must look with concern to the year of 1980 and to 2000.

The problem of developing and using ground water is the responsibility of the State, and we are confident that we can cope with it.

We are limited by topography and geologic conditions in our ability to capture surface water for use by industry, municipalities, and agriculture. We will have to rely on our neighboring States to the north to store excess water and later release to maintain streamflow for multiuses by interests located on these streams entering the State of Florida. The U.S. Study Commission for the Southeast River Basin is getting its study underway. We are sure that its recommendations to the four involved States will be directed toward meeting the long range needs of the region. The carrying out of many of their recommendations, particularly on surface waters, should be a joint undertaking by Federal and State Governments.

We feel that the U.S. Study Commission's main recommendation will deal with the larger streams, dams, et cetera. To supplement these, The Watershed Protection and Flood Prevention Act, Public Law 566, should be substantially strengthened by more funds and possibly by widening its scope of cost-sharing in the field of water storage for all purposes. This is of National interest, not just Florida's.

Florida is blessed by a mild climate which lends itself to long growing seasons. We can supply fresh vegetables to the country during the winter months, furnish ample citrus products for the health and enjoyment of everyone, materially contribute to the beef and pork requirements of the Nation, plus our many other farm products. In face of our Nation's rapidly increasing population, we realize that we are in position to play an even more important role in feeding the Nation. Water will be the limiting factor along with the conservation and wise use of our lands.

It has been estimated that agriculture in Florida required 1,182 millions of gallons of water a day in 1956. The prediction for 1970 is 2,200 million gallons daily, an increase of nearly 54 percent. By the year 2000 we believe the latter requirements will have doubled. The vast majority of this water is now used for production of vital food products. This will be more so by 1980 and 2000. The national

interest in Florida agriculture will be great and deserving of Federal participation by assisting in the development of our water resources.

Senator HOLLAND. Mr. Snow is a very practical and very useful citizen in our State in coordinating some 50-odd, I believe it is, of local conservation districts.

Mr. SNOW. Fifty-nine districts.

Senator HOLLAND. Fifty-nine districts. It may be that one of the Senators may have a question for you, Mr. Snow.

Mr. SNOW. If they would like to ask any questions I would be glad to try to answer them.

Senator HOLLAND. He is one of these practical men, not a scientist, who has brought together these various local districts in a very fine way and it may well be that one of you gentlemen will want to question him.

Senator YOUNG. I always like to talk to your soil conservation district people. They are practical and farsighted. Do you have the small watershed projects in operation in the State now?

Mr. SNOW. Yes, sir, we have some five operations in the State now.

Senator YOUNG. How many applications?

Mr. SNOW. We have got in the State associations, I think, at the present time 32 applications.

Senator YOUNG. That is a very popular program.

Mr. SNOW. Yes, sir, very much so. There are lots of people would like to use more of it but we don't have the money to go along with it. Our districts do not.

Senator YOUNG. I might say also, my colleague, Senator Holland, had much to do with the writing of that law.

Mr. SNOW. I have been visiting the Senator quite often.

Senator YOUNG. A good influence.

Senaotr HOLLAND. I want to say for the record that is a very modest understatement of his activities.

Senator YOUNG. That is all I have to say.

Mr. SNOW. Thank you very much.

Senator HOLLAND. Our next witness, according to the list, is Mr. G. E. Dail, Jr., executive director of the Central and Southern Florida Flood Control District. Before I get to him, though, I want to ask this. Has there been anybody that found this list does not comport with his plans or convenience so that he should be advanced or retarded on the list? We want to suit the convenience, of course, of those who come here. Is there anyone who wishes to be shuffled about on that list? If not, Mr. Dail, go right ahead, sir.

STATEMENT OF G. E. DAIL, JR., EXECUTIVE DIRECTOR, CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT

Mr. DAIL. Thank you, Senator.

Mr. Chairman and members of the committee, we of the Central and Southern Florida Flood Control District appreciate your concern for the future of the Nation's water resources and the time that you are spending to secure informed opinion on the problem.

First of all, I want to say that I will not take much time in making a statement today because we subscribe altogether with respect to items of our project with the statement made by Mr. John Wakefield on behalf of the State of Florida.

I would like permission, Mr. Chairman, to enter later a statement for the record if this is possible.

The CHAIRMAN. Very well, send it to Senator Holland and he will forward it to us.

Mr. DAIL. Thank you, sir. There are several things that we would like to mention today in this oral statement which more or less subscribe to things which have been said by others here but we feel they are of sufficient importance that they bear further mention.

One of the most important things that comes to mind in a development of our great multipurpose water project which we have here in Florida in which we are in partnership with the Federal Government is the matter of cost-sharing. We believe that the national interest will be best served when water resource problems are resolved on the basis of cost-sharing criteria which are applicable to entire projects rather than to separate entities within them. It does not appear to be equitable that the local partner of the Federal Government should be subjected each time to separate cost-sharing ratios on minor modifications and extensions of projects.

This can be pointed out very clearly when you can recognize the difficulty which our project has had in certain times to explain such practices to the State legislature, upon which we depend for construction matching money.

Senator HOLLAND. May I ask a question there?

Mr. DAIL. Yes, sir.

Senator HOLLAND. You mean in such an extension as that of the Henry Basin?

Mr. DAIL. Yes, sir.

Senator HOLLAND. It was difficult to explain to the local people as well as to the legislature why that should require larger contribution by the State and local agencies than was the case for other parts of your great project.

Mr. DAIL. Yes, sir, that is exactly right, Senator.

Secondly, we feel that a statement which was made by Mr. Wakefield bears further comment on the need for physical stability of these projects and physical responsibility. One of the greatest deterrents to the proper development of a water resource program in which the Federal Government is involved with the States or other political subdivisions is in the field of finance.

Your serious attention is directed to the need for establishment of these projects and program on the same basis that we will say a capital-improvement program in industry would be undertaken and that is to, of course in a practical way, to have some longer range ability to say at what level the project will be financed.

This year-to-year basis of financing which we recognize is the way Congress must basically operate is extremely difficult and as Mr. Wakefield pointed out, particularly so with us when we have to go to our legislature.

Senator HOLLAND. May I interrupt to say that while I know of no remedy to that problem because no Congress can absolutely bind its successor, I want to say that our colleagues in the Senate have been completely cooperative in meeting the problem from year to year. While I am not reflecting upon our other body, the House, the problems of cutting down budget approaches and so forth and in one year

even cutting out the appropriation, have originated entirely in the other body, not on the part of the Florida member, as you well understand but because of the opinion of others who undoubtedly have conscientious views on it. We share the concern which you express with reference to the fluctuations in size of the program from year to year and I want to make it very clear that that problem has not arisen in the Senate because we have had complete cooperation not only from the Senators who are present here but from the Senate in general to regular and continuous approach to the problem without fluctuation.

Mr. DAIL. I am glad you brought out the point that this has not been true in the Senate because we are well aware of this.

Senator HOLLAND. It certainly has not. The Senate has been very appreciative of the problem and has been very willing to attack it on a regular and continuing level, which is much more calculated to meet the local and State problems.

One other item which I would like to stress is the need of determining economic justification on a comprehensive basis rather than an arbitrary, segmented division into small components. In assignment of benefits and cost by such division a vital portion of a project could possibly be excluded, thus jeopardizing, perhaps, the overall project purpose. In this I am not referring specifically to our project but rather to these as a whole.

One point that we also think is important for you to consider in development of water resource programs is our rather unique partnership with the Federal Government which by and large we feel is a good pattern for the development of water resource programs which will serve the needs of the people. It perhaps will need and does need some refinements and some of these I have mentioned but all in all it is a good pattern. We do feel, however, that legislation which may in the future be enacted should spell out perhaps a little more closely the responsibilities of partnership and give weight to the coordination of planning by the local partner as well as the Federal partner.

Senator HOLLAND. I think it is important that the record show that the State and the local organization has gladly accepted the basis of contribution and of partnership approach in your own project and program. That is correct, is it not?

Mr. DAIL. That is correct, sir.

Senator HOLLAND. I believe the Hoover Commission stated that the basis of cooperation here was the largest of any such project in the Nation.

Mr. DAIL. That is correct. We have figured that all in all the State will put approximately 50 percent or local interest will contribute approximately 50 percent at the cost of the total project.

Senator HOLLAND. But your contribution that should be accepted is based on the fact that some of the good results are results which accrue to the benefit of local property owners or cities or others who need the results accomplished by this program.

Mr. DAIL. Yes, sir.

With that, gentlemen, I think that I shall close unless there are questions.

Senator HOLLAND. May I state for the record that while we gladly accept that, here in Florida we have other programs which we wish to approach as early as possible in which the high level of local benefits obtained in the central and southern Florida program will not apply and we think that each program should stand on its own basis and on its own merits in this matter of contribution. Yet we would like to have a more uniform approach to the problems nationally if it is possible to work it out.

Mr. DAIL. Yes, sir.

Senator HOLLAND. Thank you very much, Mr. Dail.

Mr. DAIL. Yes, sir.

STATEMENT BY G. E. DAIL, JR., EXECUTIVE DIRECTOR, THE CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT

Mr. Chairman and members of the committee, the board of commissioners and staff of the Central and Southern Florida Flood Control District appreciate your concern for the future of the Nation's water resources and the time which you are devoting to securing informed opinion on the problem. Obviously this is a successful project. Flood damages prevented to date are in excess of Federal appropriations for protective works. The project shows a favorable benefit-to-cost ratio of 3.8 to 1. In areas where works are complete and in operation flood stages have been successfully reduced.

Both the flood control district and the Department of water resources have worked in concert in this regional, comprehensive and multipurpose water-control project.

Both the flood control district and the department of water resources have in this local-State-Federal project. Similarly the State of Florida through the department of water resources and its predecessor agencies has collected a body of experience in dealing with water problems. Therefore these comments are largely concerned with operational-practical matters to which your attention is invited in your search for the ingredients of a sound national water resources program.

The regional watersheds served by the central and southern Florida flood control project are entirely within the State of Florida and embrace one-third its area and affect one-half its population—more than 2 million persons.

The project problem is water control. At various times the area has too much water and soon after floods have receded it may suffer drought.

The national interest is best served when economically sound water resource projects, such as this, are completed expeditiously and economically. Elimination of intermittent and devastating flood and drought can result in uninterrupted use of urban and agricultural lands. It is manifest that the partnership approach on a regional basis is the most desirable method yet devised to handle a project of this magnitude and complexity.

Your consideration is invited to the following areas of immediate concern to your committee in making recommendations to the Congress for the establishment of Federal water resources policy.

ESTABLISHMENT OF UNIFORM COST SHARING IN WATER RESOURCES PROJECTS

Costs in water resources projects are shared between Federal and non-Federal interests in accordance with provisions of general river and harbor and flood control laws, specific requirements of acts authorizing certain projects, and administrative instructions issued by the Bureau of the Budget where rules for cost sharing in particular instances are not specified by law.

In projects where justification is based on local flood protection the general flood control acts dating from 1936 provide as a minimum requirement of local cooperation that non-Federal interests shall provide lands, easements, rights of way, hold and save the United States from damage due to the project, and operate and maintain the completed works. In addition, administrative instructions issued by the Bureau of the Budget (December 31, 1953) require that where land enhancement constitutes a benefit of a project local interests shall pay 50 percent of the first cost proportionate to that benefit.

The project for central and southern Florida is sharing project costs with the Federal Government on the basis of a revised cost-sharing formula resulting from congressional action; it is also sharing cost on the basis of a separate congressionally approved evaluation for a part of the project.

These facts are presented to indicate the diversity of cost-sharing practice affecting one project. They reveal the necessity for a uniform national practice. It is especially difficult to achieve financial stability as between State and Federal appropriations under these circumstances. State legislators are hesitant to appropriate funds to a project in which the cost-sharing formula calls for different local contributions in several areas of the same project.

Determinations of the feasibility of projects should rest upon findings for an entire project and not for segments thereof. When the latter method is utilized overall project purposes can be jeopardized in certain subordinate areas of the project.

CALCULATION OF ECONOMIC JUSTIFICATION

While it is recognized that benefits are computed without regard to who receives them and without consideration of the question of repayment for services, it must be realized that benefits cannot accrue from primary works alone.

Increased utilization of property is made possible through alleviation of the flood hazard, improvement of drainage conditions, creation of usable land by spoil disposal, building of county and State roads, improved farming methods, ect. The increased utlization or enhancement benefits are measured in terms of increased net earnings for the improved conditions, or by the improved market value of the land resulting from the project. These benefits are considered in project formulation and justification, they are of local value and are the basis for increased local cooperation.

In the project for central and southern Florida numerous benefits are feasible only through privately financed secondary and tertiary works. Consideration of this fact in assessment of benefits is essential.

While certain parts of a plan may show a higher economic value than others, economic justification should consider the interrelation of the features of a comprehensive development and the necessity for coordinated construction and operation instead of separate economic computations for each.

THE NEED FOR COORDINATED PLANNING THROUGH PARTNERSHIP

In a Federal-regional or State partnership for development of water resources it is believed that the local coordinating agency relationship with the Federal Government to serve all local interests is the best method, as stated above. However, such a local agency should be recognized as having a status equal to all of the Federal agencies involved at all levels. Future legislation in this regard should, as a part of the requirements for local cooperation, provide full partnership for such local agencies in the engineering, fiscal planning, development and management of water resources.

Some method should be devised in the coordination of planning so that the great timelag between original planning and construction can be reduced. It is often necessary that planning be up dated, where necessary, to meet changing conditions and to make the project fully responsive to the needs of the area to be served.

THE NEED FOR FISCAL STABILITY AND RESPONSIBILITY

Perhaps the greatest deterrent to the proper development of water resource programs in which the Federal Government is involved with the States and other politcal subdivisions, is in the field of finance. First, attention is directed to the need for establishment of these projects and programs on the same basis as capital improvement programs are undertaken by private industry. This, it seems, calls for Congress to establish a desirable level of appropriations to these programs on a continuing rather than on a year-to-year basis. This would permit the local coordinating agency to arrange the local portion of financing such projects in a more orderly manner than is now possible. Because present policies with regard to authorization and appropriation are not correlated with planning in project works, valuable time and money is wasted and the projects cannot produce the benefits for which they are designed, at the earliest possible date.

DEFINITION AND DELIMITATION OF DISCRETIONARY AUTHORITY

In the project for central and southern Florida, there are occasions of record when project benefits could have been increased if the limits of the discretionary authority of the Chief of Engineers had been more specifically identified. Some definition should be given by the Congress to the limits of such authority intended to be imposed by flood control acts, and elsewhere upon the chief administrators of the executive in the various responsible Departments such as Army, Interior, and Agriculture.

The necessity for such definition is most apparent when consideration is given the timelag between planning, authorization, appropriation, and construction. Normal progress demands reasonable discretionary decisions which are administrative in character and which do not lessen the prerogatives of the Congress.

CONCLUSION

It is recommended that the following water resources policy matters be considered by your committee in formulating its report to the Congress.

1. Establishment of uniform cost sharing in water resources projects based on congressional directives.
2. Adjustment in calculation of economic justification to include all identifiable costs and benefits.
3. Partnership planning which more clearly recognizes status of State-level agencies.
4. Financing of projects on capital investment basis.
5. Definition of discretionary authority of the executive agencies to make changes in authorized projects.

Senator HOLLAND. The next witness here is Mrs. John Cochran, president of the League of Women Voters of Jacksonville.

I note that the League of Women Voters of Florida support her appearance here. We will be very glad to hear you, Mrs. Cochran.

STATEMENT OF MRS. JOHN COCHRAN, PRESIDENT, LEAGUE OF WOMEN VOTERS OF JACKSONVILLE

Mrs. COCHRAN. Thank you, Senator Holland. I am representing the State legislature.

Mr. Holland, Mr. Chairman, and members of the committee: For the past 4 years the League of Women Voters of Florida, consisting of 23 local leagues with a membership of 2,300, have been studying national water resources. We have come to appreciate the complexity and importance of water resources development. We now believe in the value of long-range regional or river basin planning and development; we see the need for coordinating among the many Federal agencies and between the local, State, and Federal agencies involved and we are seeking criteria to establish an equitable system of financing.

The League of Women Voters of Florida has also studied the water needs and resources of Florida. Two of our local leagues have made special studies of river basins, namely, the Suwanee River Basin and the Hillsborough River Basin.

We believe that normally the fundamental water problems of Florida is too much water in the wrong place at the wrong time. During abnormal years we have experienced general water shortages and acute local water shortages due to a poor distribution of rainfall. We see Florida's water resources determining the extent and direction of its future growth. With increased population and industrial expansion, Florida's water resources may not continue to exceed the need as they now do, unless properly managed.

We have been especially concerned with the management of pollution. Certain progress in pollution control has been made since 1957 when enforcement in our State law was strengthened and provision included for injunctions against potential violators. We want to hold on to this progress.

Increased population and industrial expansion will bring increased pollution requiring pollution control measures. These will be financially costly and we are concerned lest funds match need and interest, particularly during the period when Florida will be attempting to grow industrially. Our members have observed that full advantage is being taken of Public Law 660 and we are very much in favor of this type of Federal incentive legislation.

Our members have observed that since 1957 when our State department of water resources was created, local interest in water management has increased and the possibility that local projects can be dovetailed into a coordinated State plan has appeared. We believe our State department of water resources will support those national water policies and procedures which promote coordinated administration, equitable financing, and regional or river basin planning.

We believe that the proper role of the Federal Government is to aid and encourage the State government in fulfilling their responsibilities in the control and conservation of their State water resources. There will be, of course, projects and needs too large for the States to handle alone and that are so manifestly national in character that a maximum of help will be needed from the Federal Government. Federal incentive legislation should and has helped State governments to initiate projects.

Our members are of the opinion that there is a need for long-range financial appropriation for projects in which the Federal Government will play a large role. These projects should be long range in character and we expect our State and local governments to provide their share under long-range appropriations as well. We have had in Florida the experience in connection with our central and southern Florida flood control project of congressional appropriations not keeping pace with the planned work. When this happens time and energy seem wasted and doubts arise as to the validity of a project, and a lack of interest in managing our water resources to meet present and future needs threatens.

It is in this area of long-range planning and activities and continued attention to our water needs that we in the League of Women Voters of Florida are greatly encouraged by the formation of your committee and by the introduction of Senate bill 2549. The piecemeal development of our water resources and the sporadic attention to our need for water which characterized our past no longer suffices to meet the needs of our people today and of our children tomorrow.

Senator HOLLAND. Thank you very much, Mrs. Cochran.

Senator Young, I am sure, has a comment. May I say that I have just been pleased to hear from the chairman of the staff that the League of Women Voters has appeared in each of the 20 hearings and has made, in the opinion of the staff and the committee, a highly constructive contribution.

Mrs. COCHRAN. Thank you.

Senator YOUNG. I was going to say that I have attended about 8 or 10 of these meetings and in all of them, the League of Women Voters has been represented and you have lived up, Mrs. Cochran, to the high standards set by the previous witnesses. I want to commend your organization for making a very careful study of water resources problems and presenting very fine testimony.

Mrs. COCHRAN. We thank you so much.

Senator HOLLAND. I notice the next two witnesses are both from the pulp industry group, Mr. Harry H. Saunders, chairman of the Florida group and Mr. Thad McDaniel, president of the Georgia group. Have you arranged your order of appearance?

Mr. SAUNDERS. I will take it first.

Senator HOLLAND. Mr. Saunders will appear first.

Harry Saunders.

STATEMENT OF HARRY H. SAUNDERS, VICE PRESIDENT, ST. JOE PAPER CO.; CHAIRMAN OF FLORIDA PULP & PAPER INDUSTRY

Mr. SAUNDERS. Thank you very much, Senator Holland, and I want to take this opportunity of saying to Senator Kerr and Senator Young that those of us from Florida who have appeared at various times before various Senate committees certainly appreciate the kindness and the kind consideration that you Senators have always shown us. We have at times had an opportunity of telling you so, Senator Holland, but we do not always have the opportunity of telling the other Senators on the committee.

Senator YOUNG. Thank you very much.

Mr. SAUNDERS. Speaking for the pulp and paper industry, which is an industry that ranks fifth in size in the Nation and ranks third in the amount of water consumed, it is an industry which is highly important on a national basis in that only 7 of the 50 States of our Union do not have one or more pulp and paper mills.

Senator YOUNG. Even at that we import a very high percentage of our requirements, do we not?

Mr. SAUNDERS. Not a high percentage of our requirements; no, sir.

Senator YOUNG. A considerable amount.

Mr. SAUNDERS. There are some imports, all right; yes, sir.

Senator, I want to say this one thing: I have with me here today representatives from all the other paper companies in the State—with one exception—Mr. Albert Ernest, Jr., of the St. Regis Paper Co. of Pensacola, Fla., Mr. Frank Coogan, International Paper Co., Mobile, Ala., Mr. Harvey Mathis, International Paper Co., Panama City, Mr. R. H. Allen, Jr., International Paper Co., Mobile, Ala., Mr. Gil Tougas, Buckeye Cellulose Co., Perry, Fla., Mr. J. W. Haley, Owens-Illinois Glass Co., Jacksonville, Fla., Robert Phinney, Container Corp. of America, Fernandina, Fla., and Mr. Thad McDaniel, Rayonier, Inc., Fernandina, Fla. The only absentee is the Hudson Pulp & Paper Co., and I am sure you will excuse them when I tell you they are on strike and trying to settle their difficulties at the moment.

Senator HOLLAND. They are in accord with your presentation, however?

Mr. SAUNDERS. Yes, sir. I have made an agreement with these gentlemen. They are serving as my panel of experts and I have agreed not to answer any questions. They are to answer all the questions and I will just do the talking.

These companies have cooperated to furnish your committee with this statement relative to present and future needs for water and we hope you will find this statement to be of value in your considerations of the all-important water problems for now and the future.

We are very happy to see in the "Information Desired" sheet which you issued for the field hearings that you have classified industry along with agriculture and the population. Industry has not always had this consideration in State and National affairs when it came to water use, and we do appreciate the joint consideration that you are giving us.

The pulp and paper mills in Florida employ more than 8,500 people in direct operation of the mills and converting operation. It is estimated that an additional 5,000 men are independently employed in procuring, cutting, and transporting the pulpwood to the mills. We will not try to enumerate the other people who are gainfully employed because of the pulp and paper mill operations in Florida.

The nine mills in Florida have an annual payroll in excess of $61,800,000. We spend in excess of $65 million each year for pulpwood, and our annual freight bill is in excess of $50 million.

We use 192 million gallons of fresh ground water and 48 million gallons of fresh surface water each day. This makes a total daily use of 240 million gallons of fresh water. In addition to this fresh water, we also use 130 million gallons of salt water each day.

We anticipate that by 1980 our industry in the State of Florida will be using 380 million gallons of fresh water daily and that 80 million gallons of this will be surface water and that 300 million gallons will be ground water. Eight percent of this estimated increase is already scheduled for operation in early 1961.

Senator HOLLAND. May I ask a question there?

Mr. SAUNDERS. Yes, sir.

Senator HOLLAND. I think it is too customary for Congress to regard our water problems in Florida as concentrated in the heavy urban areas and the heavy agricultural areas of the southern part of the peninsula. Your paper mills to the contrary are located, are they not, across the northern part of the State from Fernandino to Pensacola?

Mr. SAUNDERS. That is correct, Senator.

Senator HOLLAND. So that your water resource problems, which are very great, which are already present, and will be greater in the future, growing out of the water used and the waste disposal problems of the paper industry relate entirely to the north and western part of the State?

Mr. SAUNDERS. That is absolutely correct.

Water use is just as important as pine trees. We know that we are large users of water. But in our mills operations we conserve water—we use it over and over and at least 90 percent of the water entering our mills is placed back in circulation, most of it being given to the Gulf of Mexico, the Atlantic Ocean, or to streams that soon empty into these great bodies of water. So we are users of water and not consumers.

Our industry in Florida helps produce water. The 35 million or more acres of land that are being used to grow pine trees are also helping to produce and regulate the water supply of our State.

Ours is an industry that in addition to helping produce water is also helping the general economy of our State by seeing that more pine trees are planted every year than are cut every year. We are not depleting our natural resources. Ours is an industry that provides or returns more natural resources than it uses.

Ours is also an industry which has, at great expense, taken barren or cutover blackjack lands and replanted them with pine trees. In this program we have returned millions of acres of land to a productive and taxable basis. This program also means that those millions of acres are protected from soil erosion and afford additional areas for water retention and thus help build up the water supply of the State and Nation.

Florida has a comprehensive water resources law which we believe to be adequate, and we in the paper industry are firmly convinced that the control of water supplies and the problems related to water usage should be left to the individual States or should be regulated by mutually agreed upon interstate compacts. It is not believed that these problems can be reasonably and effectively regulated or controlled by the Federal Government.

It is believed that it is desirable to have the Federal Government recognize that the States themselves have an unchallengeable right of ownership of the water in the State as far as the right of allocation is concerned, and that any policy statement made by any combination of governmental agencies covering water rights should give clear recognition to this fact.

We believe that the States have ample power to preserve and protect the natural resources of the States concerned, and with respect to any water separating the States or flowing through the States ample powers exist to preserve required standards.

Senator HOLLAND. You mean through compacts which would be entered into by the State and then submitted for approval to the Federal Congress?

Mr. SAUNDERS. Either that or compacts between the States themselves which are agreeable to the two States.

Senator HOLLAND. You understand that to have legal force that such compacts have to be approved by the Congress.

Mr. SAUNDERS. That would certainly be satisfactory, Senator, yes, sir.

We feel that within the State of Florida, ample authority exists by law to protect the water supply of the State, and ample laws exist, including injunctive remedies, to control pollution of the streams. The State board of health has ample rulemaking power and these rules may be enforced by prosecutions and injunctions. We have a capable health board that is completely in control of this situation.

We feel that the pollution of streams is a matter that pertains directly to health; and the discharge of substances into the waters of the State, which are harmful to human, animal, and aquatic life, is prohibited by law; and the law can be adequately enforced.

With respect to streams separating or flowing through two or more States, compacts or agreements between the States concerned and as

you say, approved by the Federal Government, have been found to be a satisfactory method of resolving differences.

The subject of water pollution control, as important as it is now, will become of almost paramount importance in the national water conservation picture as the years go by and the water supply of the Nation continues to tighten.

The disposal of almost all of the waste waters produced by paper-mills in the southeast is carried out on a dilution basis, relying on a sufficient volume of water being available to dilute the effluent so that the resulting blend is of good quality.

The pulp and paper industry is not a consumer of water as much as it is a user of water. Fully 90 percent of the total water used in a mill is returned to the water courses. In the old days this water was in poor condition, but by various changes made in the mill processes almost 50 percent of the pollution load has been removed from the waste originating in some pulp and paper processes. The organic matters removed from the waste are either recovered or burned. This means that, given suitable amounts of dilution water, the waste water can be discharged without causing any decrease in water quality of the receiving stream.

We in the pulp and paper industry recognize the pollution problem and as a matter of fact we at some times have been accused of having invented pollution of water on the streams. We do want you to know we are doing something about it. In 1943 a group of pulp and paper mills formed the National Council for Stream Improvement. Today approximately 225 pulp and paper mills are members of this council and our industry is spending over $1 million each year in research alone.

In addition, the individual mills in our industry have spent over $100 million in the past 10 years in construction of treatment facilities—all to keep our rivers and streams in the best of health.

We would like to suggest that your committee contact the National Council for Stream Improvement and secure from them the data that their long process of scientific research has made available.

Little or no steps have been taken in the past to assure that desirable minimum flows would be maintained below dams constructed by either public or private utilities or by the Corps of Engineers and the Bureau of Reclamation. In many instances the power generated at the dams is so-called peak power, produced for a limited time each day, which in turn sets up a periodic discharge of water. This type of discharge is unsatisfactory for dilution purposes as well as other purposes such as maintenance of aquatic life and recreation.

Minimum flow figures should be written into bills authorizing dams built by Federal agencies, and when built by public or private utilities the minimum continuous discharge figure should be specified in the construction permits.

We would like to recommend that the excellent work being done by the Army Engineers and Congress in the matter of inland navigation, flood control, and harbor improvements be continued and expanded. In Florida, industry is being penalized because coastwise service from the gulf to northern and eastern markets has been discontinued. Extension of inland waterways and construction of the cross-Florida barge canal would alleviate this situation.

If this statement does not give you all of the information you desire, please feel free to call on us for such additional information that you may need.

Copies of this statement are being furnished to the U.S. Study Commission which is making a study of the southeast river basin.

Thank you very much.

Senator HOLLAND. I think perhaps this record should contain a showing of the fact that that study commission held a hearing in Tallahassee on the problems of the southeast river which were committed to it only last week.

Mr. SAUNDERS. That is correct.

Senator HOLLAND. Did you appear before that?

Mr. SAUNDERS. We did, and we told them at that time we would give them copies of the statement we were presenting here today.

Senator HOLLAND. I am going to ask the chairman of that study commission to supply for the files of this committee the record of the hearings which it is presently holding and will soon complete.

That study commission is studying the rivers from South Carolina, Georgia, Florida, and a portion of Alabama, as I recall it, and I am sure the chairman of the committee is familiar with that study commission which is now functioning.

The CHAIRMAN. I am glad to hear that its work is underway. That is the result of the legislation that you and your colleagues in the States brought about in these States a year or two ago?

Senator HOLLAND. That is correct.

Mr. SAUNDERS. Thank you very much.

Senator YOUNG. I was happy to hear the witness emphasize the need of States control of the water of various streams. The Farm Bureau tended to emphasize the States rights question and most of the Western States and we do have a real problem there, particularly in my own area. The Missouri River comprises about one-seventh of the total land area of the United States. The Federal Government has spent more than $2 billion on the development of the river. But still there is no law or arrangement whereby the States are guaranteed any share of the water of the Missouri River. We are going to run into serious trouble in the future unless some hard and fast rule is erected.

Mr. SAUNDERS. Senator, we feel that here in Florida we are a little different from a majority of the States in that respect on water. We, as you see from the map, are pretty well surrounded by water and we are only bounded on one side by Georgia and Alabama. We have not had too much trouble getting along with those folks except on the football field. We find them pretty nice folks.

Senator YOUNG. You fortunately have an amply supply of water. But a time may come when even you may have a need of some law to protect the States rights.

Mr. SAUNDERS. Yes, sir. Thank you.

Senator HOLLAND. Mr. Thad McDaniel, whom all of the Senators present will remember kindly as one of the staff of one of our Georgia Senators at an early day, is here representing the Georgia group of pulp and paper producers.

Mr. McDaniel, the next witness.

STATEMENT OF THAD McDANIEL, PRESIDENT, GEORGIA PULP & PAPER ASSOCIATION

Mr. McDANIEL. Thank you, Mr. Chairman.

I live at Jessup, Ga. I am president of the Georgia Pulp & Paper Association.

There are eight large pulp and paper mills in the State of Georgia and of course they are users of large quantities of water as are the mills in Florida.

These mills wish to file a statement with this committee but unfortunately it has not been completed at this time. I merely rise at the moment for the purpose of asking the privilege of filing later.

The CHAIRMAN. How much time do you need, Thad?

Mr. McDANIEL. How long will the record remain open?

The CHAIRMAN. We will keep it open to the middle of January if that will help you.

Mr. McDANIEL. I think we can submit it before that, sir.

The CHAIRMAN. Fine.

Mr. McDANIEL. Thank you very much.

The CHAIRMAN. You give it to Senator Holland and he will give it to us.

Mr. McDANIEL. Thank you, sir.

(The prepared statement referred to follows:)

STATEMENT OF J. A. MAY, PRESIDENT, GEORGIA KRAFT CO.

The Georgia Pulp & Paper Association, whose membership is composed of the following companies, is pleased to present this statement on behalf of its membership for the consideration of the U.S. Senate Select Committee on National Water Resources:

Brunswick Pulp & Paper Co., Brunswick, Ga.
Certain-Teed Products Corp., Savannah, Ga.
Georgia Kraft Co., Macon, Ga., Rome, Ga.
Owens-Illinois Glass Co., Mill Division, Valdosta, Ga.
Rayonier, Inc., Jessup, Ga.
Sonoco Products Co., National Paper Co., Division, Atlanta, Ga.
Southern Paperboard Corp., Port Wentworth, Ga.
St. Marys Kraft Corp., St. Marys, Ga.
The Ruberoid Co., Savannah, Ga.
Union Bag-Camp Paper Corp., Savannah, Ga.

Water is literally the lifeblood of pulp and paper processing. From the time chemicals in water solution are used to dissolve those portions of the wood not suitable for making pulp and paper until the finished product is ready for delivery, our product is carried and processed in water. At some points in our mills, it is necessary that the material being processed consist of more than 99 percent water and less than 1 percent pulp. Naturally, such an operation requires tremendous volumes of water. Fortunately, most of this water is reused many times and it is customary for modern, efficiently operated mills to require as fresh makeup water only about 5 percent of the total water used. This reuse of water has the effect of making it possible to control losses of chemicals and minimize stream pollution. It also reduces greatly the demand on water sources for fresh makeup water and the diversion of water from other uses to manufacturing. Without this extensive reuse of water, the pulp and paper industry could not produce the tremendous amounts of pulp and paper products required and demanded by our growing population and our ever-increasing standard of living.

Of the mills represented by the Georgia Pulp & Paper Association, one depends for fresh makeup water on surface supplies, seven obtain all of their water from wells, and two use both surface and well water.

In spite of quite general use of complex and costly devices to permit the reuse of water, the major mills now in operation in the State required in 1959 the use of fresh makeup water totaling 197 million gallons per day. Of this quantity, 55 million gallons was surface water and 142 million gallons was well water. In addition, three of the mills used a total of 126 million gallons per day of salt or brackish water for cooling.

It is estimated that by 1980 the industry will need an additional 135 million gallons of fresh water per day or a total of 332 million gallons. Of this future estimate 36 million gallons per day will be required as a result of new construction and expansions which will be in operation by the end of 1961. Water to meet these future needs must be available at a cost which will permit realistic prices for the finished product.

The pulp and paper mills of Georgia are a significant factor in the economy of this State. Together the mills represented by the Georgia Pulp & Paper Association employ 12,320 men directly on their own payrolls. It is estimated that in addition independent businessmen employ an approximately equal number who gain their livelihood from procuring, cutting, and transporting pulpwood to the mills. The above figures do not include the large number of individuals who have employment because of the existence of this industry in the State. These include people employed in those operations which are users of paper as a major raw material, the employees of the producers of chemicals and other raw materials, and those engaged in service facilities.

The Georgia mills spend more than $170 million per year on payrolls, pulpwood, and transportation. This $170 million figure breaks down as follows:

Payroll	$61, 300, 000
Pulpwood	68, 000, 000
Transportation	40, 750, 000

The pulp and paper industry in the South has always been a leader in the conservation of the natural resources of the country. To insure the continuous renewal of the wood resources of the area, the pulp and paper industry in Georgia supports an extensive planting program. Large nurseries are maintained in the State to provide sufficient seedlings, so that more trees are planted each year than are cut in a given year.

This program also extends to reclaiming land. Under this phase of our conservation activities barren and cutover land is seeded and returned to a taxable, productive status. In this way other resources are also conserved. All of this land is protected from soil erosion, thus affording additional areas for water retention. This results in a more even runoff of water, which in turn permits more effective utilization of this resource.

Many years ago it became apparent to the management of the pulp and paper industry that with increasing industrialization it would be necessary to seek and find improved methods of pollution abatement. The National Council for Stream Improvement was organized by the pulp and paper industry in 1944 to carry on research on pollution abatement and to work with the mills and regulatory officials to develop effective and economically sound means of reducing water pollution. Presently the National Council is supported by over 95 percent of the pulp and paper industry. Since its formation, the industry has spent through the council $4,200,000, or an average of $280,000 per year, in organized pollution abatement research and related activities.

Although the industry has made amazing strides in abating pollution, it is still necessary to use the streams to some extent for the disposal of wastes which are too voluminous and too dilute to be processed economically. The extent to which the streams are used is considered to be both necessary and proper. We feel strongly, however, that industry and other users of streams should take all necessary steps to maintain the highest practical degree of water quality. We are confident that if these efforts are carried out in a conscientious and systematic manner they will lead to a reasonable compromise of various conflicting interests.

Effective effluent treatment can be seriously harmed by the operation of dams unless reasonable continuous downstream flows are maintained. The operation of such installations often results in a cyclic pattern in the discharge. In extreme cases, where there is no flow during portions of the day and over the weekend, the downstream areas are completely eliminated as potential sites for wet process industries. The effect on existing industrial installations is in direct

proportion to the severity of the cycles and produces economic hardships on these mills by requiring abnormally large water supply and waste disposal systems.

Authorizations for dams should include provisions which require a continuous discharge of a reasonable amount of water. This will assure that the dams, while fostering some phases of economic development, will not stifle others.

Data reported by the U.S. Public Health Service has established that many types of dams have a deleterious effect on water quality. One effect is the lowering of the dissolved oxygen content of the discharged waters. This condition can damage the fish and wildlife of the river. It can also make the water less useful for waste disposal. The Georgia Pulp & Paper Association recommends that dams be constructed in such a manner as to do a minimum of damage to water quality.

The Georgia Pulp & Paper Association believes that the control of water resources is a proper function of the individual States, and that the problems and decisions related to water usage should be solely the responsibility of the individual States.

This association will be pleased to cooperate further with the committee in any way possible.

Senator HOLLAND. I have been told that Dr. Robert Engle of one of the State agencies wanted to be heard before we got away from the statewide groups.

Is Dr. Engle here? His name was not on the list.

STATEMENT OF DR. ROBERT ENGLE, DIRECTOR OF RESEARCH, FLORIDA STATE BOARD OF CONSERVATION

Mr. ENGLE. Thank you, Senator.

Senator HOLLAND. Which State agency do you represent?

Mr. ENGLE. I am director of research for the Florida State Board of Conservation and I do not have a prepared statement. The remarks I make will be impromptu and short.

I have two points to offer to you, gentlemen.

One is that prior to the Second World War there was some interest in and knowledge gained concerning the coastal fisheries of the United States, as you know, particularly around river mills, bays, and inlets and protected lagoons. Since the Second World War there has been an accelerated research program directed particularly toward the near coastal area. That is, the estuaries, particularly, the lagoons, bays, and the protected waters, the lakes, of which, of course, Florida has a great many.

Senator HOLLAND. You mean the program set up under the Saltonstall-Kennedy funds?

Mr. ENGLE. Some, yes, sir, and some under ordinary funds of the Fish and Wildlife Service and all of the States with which I am familiar have also had an accelerated program. The outcome of most of this research has been that a great many of the animals which were previously considered to be strictly marine have neither a very definite obligation nor predeliction to spend their immature stages along the coast and in the bays and harbors. Of course immediately we see the conflict developing between this concentrated urbanization which always occurs around river mouths and the fact that these animals must come in there when they are young and grow up. I mention a few. Shrimp, which is presently the most valuable aquatic resource of the United States and its territories, various fishes, sports and commercial, crabs, other useful crustaceans and so forth.

We find that the definite productivity can be identified with the protection of these coastal areas and as I say, the picture is getting

more and more clear as the years go by, whereas previously we never suspected such a thing, it is now developing that we really are going to have to make definite moves to protect our resources, our marine resources by taking steps in what might be termed a protected coastal waters of most of the States. I am not as familiar with the Northern States as I am the southern but I can speak for the States along the Gulf of Mexico where this is a very prominent feature.

I urge you and others who are concerned with the water resources of the United States to consider this resource which is in the water and which is definitely related to the quality of water which comes down from the land and the amount of it.

The second point that I would like to make is that there are a great many commissions, study groups, divisions, governmental agencies, State and Federal, public interest groups, and so forth, all making these investigations and studies of water, all getting together factual information, knowledge, and values. They all are making recommendations as to proper use, all are prognosticating on the future needs and so forth. But I find in my experience the actual implementation for taking all of this factual material and all of these interesting and valuable reports and translating it into action on the part of the public is almost nonexistent. We have reports and we have reports and we have study groups. We have committees, we have commissions. We have divisions. They are springing forth in the State of Florida today something like one every 2 or 3 months. They are all sincere and they are all doing a magnificant job. We feel that we are. We are learning more and more about these resources and what should be done to protect them. We are providing justification for people who wish to protect them.

We find that the inroads made by urbanization, by industry, and by thoughtlessness continues almost unabated along the coast of Florida. The damages are continuing. On the other hand, this is a paradox to have all of this ostensible interest on the part of committees and governmental agencies and all the lack of concern or the lack of awareness by the public generally on the other hand. And that, gentlemen, to me I think is the central problem of this whole thing. We have myriads of scientists in the United States working on water today and our resources, but we are not translating the information they gain into effective action by the public generally.

And I think it comes down to public education one way or the other because I think if the public were aware of the immense values that are being dissipated at an alarming rate they would be action-minded and would help us all protect these things.

That is all I have, gentlemen. Thank you.

Senator HOLLAND. I thank you. I am advised by the head of the staff of this committee that this committee does not have jurisdiction of the subject matter which you have mentioned but that instead that jurisdiction is vested in the Interstate and Foreign Commerce Committees of both the Senate and the House and that you are a member of some commission that has been set up to study this matter. Is your point in appearing simply that there is an interlocking interest here that you think should be incorporated in this record?

Mr. ENGLE. Yes, sir, for this reason. The water which you people are interested in is also of interest to the costal areas in Florida for

this reason. It comes down and is an integral part of the environment which produces the wealth of the marine areas of the State of Florida. If it is bad water, or if it is misused, or if it is dissipated in some manner, or if it is allowed to precipitate along the coast very rapidly and do a great deal of harm then when the need comes it is no longer available, the area becomes a barren desert, you might say. So that your interest in the preserving of and multiple use of water is also a mutual interest with us because if the water is properly treated in the inland and if properly distributed in time and space along the coast then the marine sources will benefit accordingly. That is why I felt that it might be worth talking to you gentlemen about that.

The CHAIRMAN. We have three members of the Interstate and Foreign Commerce Committee as members of this committee. They will participate in the formulation of the report and making of the recommendations that we will take back to the Senate. Our function is purely informative and investigatory, and we will proceed on that basis. The information you brought us is appropriate and we appreciate it, Senator.

Mr. ENGLE. Thank you for the opportunity.

Senator HOLLAND. Thank you.

Senator HOLLAND. The next witness listed is Mr. Robert Thomas, president of the Florida Waterways Committee handling the combined navigation problems of our State insofar as it relates to the waterways, both fresh, brackish, and salt water.

Mr. Thomas.

STATEMENT OF ROBERT THOMAS, PRESIDENT, FLORIDA WATERWAYS COMMITTEE

Mr. THOMAS. Thank you, Senator Holland.

Mr. Chairman, Senator Young, the Florida Waterways Committee was organized about 3 years ago by waterways and navigation interests throughout the State of Florida who finally came to realize that the development of waterways was not a local problem but actually was a regional problem and that in order to achieve our ends they should be treated on a regional basis rather than on a local basis. To that end the Florida Waterways Committee has unified all the navigation interests throughout the State of Florida and today we wish to present to you a very concise report of Florida's integrated waterways system as espoused by our organization.

I am going to call on one of Florida's outstanding young men in private and public life both, State senator from Hillsborough County, which is Tampa, Sam Gibbons, to present this program to you.

STATEMENT OF SAMUEL GIBBONS, FLORIDA WATERWAYS COMMITTEE

Mr. GIBBONS. Thank you, Mr. Thomas.

Members of the committee, I could not start my discussion here today without thanking the members of this committee and particularly Senator Kerr for making the area from which I come the largest port tonnagewise from way up in Virginia all the way around to the coast of Alabama.

The funds that have been produced by the Federal Congress have allowed us in my area to transport the chemicals in and out of our area, tanking throughout not only the United States but the entire world. We just want you to know we appreciate it and we are thankful for it.

As a member of the Florida Legislature——

The CHAIRMAN. I will tell you this. We hope that Florida's fate lasts forever and that its annual shipment will be increased.

Mr. GIBBONS. Yes, sir; we will try to get it to last forever. We are trying to get it all the way up into Senator Young's territory.

Senator YOUNG. *We get something, too.*

Mr. GIBBONS. Florida for the first 200 or 300 years of its civilized existence faced a problem of trying to dispose of its excess water. Then, for about the last 25 years of its civilized existence it has faced the problem of controlling pollution. Now, we are faced with the problem of an expanding population that puts us in the position of being the 12th largest State populationwise in the Nation. By 1968 we will be the eighth largest State populationwise.

We know right now and we have had demonstrated graphically to us that water conservation is indeed a big problem in Florida. In my area and in other areas of the State wells that were formerly fine artesian wells have become salty. We have had salt water intrusion and we have faced the problems of cities fighting over water supply areas to feed their thirsty inhabitants.

We believe in the Florida Waterways Committee that good conservation, that good flood control and good navigation practices all fit together just as well as your two hands do, and that by demonstrating to you the problems that we have with navigation, reemphasizing what Mr. Wakefield and Dr. Vernon said about Florida's conservation problems, we can show you clearly what the Federal Government's responsibilities are.

I know that you, Senator Kerr, are familiar with the inland navigation system of the United States. I would assume that Senator Young has some knowledge of it because it reaches almost to his community. This is a map showing the inland waterways of the United States, the Atlantic coastal district and the Mississippi Valley system.

You will notice on that map in the vicinity of Florida we have there a missing link, a missing link that in effect denies the people on the east coast and the central part of the area the advantages of very cheap transportation, water transportation. This denial of that cheap water transportation to these people for heavy bulk cargoes to a great extent or at least to some extent impedes the raised standards of living because our phosphates can help you and your grains can help our cattle industry. The heavy manufactured steels can help our rapidly expanding economy here and that mutuality of this entire system is being impeded because it is not yet a unified system.

I have over here a map of the State of Florida. If you will bear with me just a moment, like Senator Kerr I spent a little time in the service and I cannot really get oriented unless I have a map here with me.

This green area that I will color on the map is this great lake Okeechobee that you have heard so much about. It is the heart of the central and south Florida flood control district. The central and

southern Florida flood control district is this area that I am about to *delineate now in yellow and this is only a rough approximation.*

The navigation districts that have been formed in Florida are part of *this conservation system and as a direct result of it are the Caloosa*hatchee, and over across the lake into Stewart to the Everglades Canal, and that is almost complete.

Tying down on the east coast of Florida we have running all the way from Trenton, N.J., a complete waterway for *intracoastal traffic* all the way down, with a 12-food depth down to Fort Pierce and then a shallower depth on down to Miami, moving vast quantities of heavy bulk cargo up and down that entire project.

Out here in west Florida, stretching all the way from Mexico into *the Apalachicola region, we have an almost completed* water system that ties in this part of the United States with their area of Florida. There exists here a very fine river that you will see right outside the window here, the St. Johns River. When my grandfather came to Florida in 1880, that river was used as a navigational instrument and it still is in use as a navigational instrument and there are fine channels that exist all the way from Jacksonville down through this area of Florida, down to the area of Sanford, and that is an improved *waterway of Florida and a very fine and productive one.*

There are large springs in this area of Florida, right here and here, that flow into the gulf and into the Atlantic Ocean, discharging literally millions of gallons of water per minute, fresh water, fine water, into that area.

That is an area of discharge of water in Florida that is almost completely uncontrolled. The missing link in this inland navigation district, of course, would follow according to the map that you have there, an area from about at Palatka, across south of Oceala right here, following the basin of the Oklawaha River, which has been used for navigation for almost 100 years, into the Dunnellon area and then on down the Withlacoochee River into the Gulf of Mexico. In these areas right now there are water flood control projects either before Congress or pending on a local basis because tremendous floods have arisen even along the Withlacoochee River and along the Oklawaha River.

This canal in this part of the State would follow the natural bed of the Oklawaha River from about here and the Withlacoochee from about over here.

This is a conservation project in addition to being a navigation project, because this is a high level barge canal with a series of five locks in it. There would be one lock in this area, one lock in this area, another lock almost immediately south of the Oklawaha, one here in Dunnellon and one over here at English. It would provide, as Mr. Wakefield testified, a stabilized ground water condition in this area of the State. It would in times of flood provide a deeper channel for water to flow off faster. In times of drought the waters would be impounded to a certain extent or pretty large extent as Mr. Wakefield said, Mr. Vernon said, behind these locks. It would help the periodic flooding and drought problem that we have there.

This navigation district to be more useful will eventually be tied into this area up here and to this large port that you have provided for us here in Tampa. The Congress has already provided a navigation

district and a dredging operation starting from this area on up the west coast of Florida to tie in up here. So we have a rather integrated system eventually to Key West as one of you mentioned and you asked a question about the keys down there. They have relatively no system of obtaining fresh water other than by an aqueduct and there is one long pipeline that traverses this entire distance here, gets all that water there at that very vital military base. We advocate the eventual completion and it is an approved project of the intracoastal waterways system to move in the protected water here down to Key West, the heavy supplies that that area will need.

There is in existence in west Florida a very fine navigational project and flood control project that has been created here by the building of the Woodruff Dam here on the Alabama-Florida-Georgia line. This river is navigable below the dam and is an approved waterway project. Georgia has an inland port up here at Bainbridge that has been handling considerable tonnage for a great length of time. Also, there is a waterway that is in the stages of construction and Congress has appropriated a great deal of money for leading on up to Fort Benning up here. It is on the Alabama-Georgia State line.

We believe in the Florida Waterways Comittee that the system of waterways that you see here and others that will naturally develop out of this program, which will tie together for Florida and for the use of the Nation as a whole a fine, integrated water system that will have the advantage of moving commerce, providing additional recreational facilities, providing additional facilities to carry off excessive floodwaters when they are dumped upon this State and to stabilize the ground water level in this area and in this area in times of drought.

Thank you, gentlemen.

Senator HOLLAND. Thank you, Senator Gibbons.

The CHAIRMAN. I would like to express my appreciation.

Senator HOLLAND. I am sure that the record shows already that the initial appropriation for the development of the west coast waterway will begin construction at the mouth of the Caloosahatchee moving north in the near future. I was informed by the district engineer last night that the advertisement will begin in January and the first project to be let early in the spring.

I am sure that the record should also show that the engineers are restudying that omitted portion of the west coastal waterway from the Apalachicola area south to Tarpon Springs to see whether or not it can be recommended for authorization. It has not been authorized up to this time.

Mr. GIBBONS. Excuse me, Senator Holland, if I may, I omitted here in my haste a very important one and one that ties in very closely with national defense.

This is an improved waterway here already. It has been in existence.

The CHAIRMAN. The St. Johns River?

Mr. GIBBONS. Yes, sir; up to Sanford.

The CHAIRMAN. Yes.

Mr. GIBBONS. The St. Johns River runs all the way down in here and semicompleted in various stages along here. In order to provide a discharge of excessive water in this area whenever it occurs it would be easily possible and this has been one of the studied projects that

the engineers have undertaken to connect this waterway over into the Titusville area which actually right here is Cape Canaveral. I think all of you know that the extremely large missiles, such as the one that is now being built at Redstone, the Saturn, would be impossible—in fact, the Army has told us it is impossible to move that any other way other than waterways, it is so large. It is approximately the size of a 25-story building.

This could provide with the cross-Florida barge canal down the Tombigbee River by Redstone on down into the intracoastal waterway a way of moving these tremendously large missiles into this test area of Cape Canaveral here. This would provide recreation incidental to that commerce. It would be some 113 miles shorter coming this way than following up along this way to get into the Canaveral area.

Senator HOLLAND. Any questions?

The CHAIRMAN. I am impressed and delighted by the résumé which this gentleman has given us and I am glad that it is in this record.

Mr. THOMAS. Mr. Chairman, we have a number of other gentlemen with us today who are vitally interested in this program, and I would like to call on several of them at this time, leading off first of all with a man whom you all know better than I do, our own Congressman Charles Bennett, who has been a pioneer and a real pusher in this program which we present to you today.

STATEMENT OF HON. CHARLES BENNETT, MEMBER OF CONGRESS FROM THE STATE OF FLORIDA

Mr. BENNETT. I would not trespass on the time of this wonderful committee that has done splendidly by us by coming down here and holding these hearings. I do have a prepared statement I would like to submit at this time.

I would like to say as to this fine presentation Senator Gibbons made from the Tampa area that there is a program of waterways in Florida that I would say has no rival in this great Western Hemisphere of ours. It has very considerable rivals in Europe where they have used for a long time the very valuable facility of the canals. This makes it all the more important in the age in which we are now living.

As a member of the House Armed Services Committee, I am deeply impressed by the fact that it is not possible to obtain for the eastern seaboard of the United States even half of the oil that must be had there in time of war by any other procedure than the cross-Florida barge canal. There is no other procedure that would be within one-fifth of the value of this. Any other procedure would cost five times as much to do and could not be done in advance as this program can be done.

I may say that this cross-Florida barge canal has been authorized by Congress on its defense value. It, however, has this year received economic justification in addition. So this is economically justified and can be built on that basis as an economic proposition. Actually, if we applied to it certain other values, such as the wildlife or recreational, plus the defense value—and I have been working for some time on legislation along that line—which would allow an economic value to defense values, then this thing would be overwhelm-

ingly justified. Probably there would not be any project in the world that would compete with this particular project.

I want to close up before I make too much of a speech here by saying I do hope you will realize in the presentation by Sam Gibbons, who is from Tampa, the area that so actively opposed the ship canal facilities across Florida, we have a symbolic presentation by him which shows the unity in Florida that did not exist 20 or 30 years ago but which does now for these fine waterway projects. All of them are important and not only important to Florida but they are important to the Nation.

Senator Holland mentioned a minute ago the central and southern Florida flood control project, that this was an example picked out by the Hoover Commission as being one which was the best example of all of local participation because there was so much local value in it, that the local government has given so much and the local people have given so much for that very expensive project. On the other hand, this is a project which is of paramount national importance. It is an emergency project. I do not mean to say by that we are trying to justify money as an emergency that could not be justified economically or otherwise. I mean to say it is of vital importance to national defense of our country to such extent that it puts to shame any other particular values that may be in this particular project. It is valuable to us locally, yes, but it is something that the U.S. Government must have if it is going to be adequately defended, if we ever have another war.

Thank you.

(The statement follows:)

STATEMENT OF HON. CHARLES E. BENNETT, U.S. REPRESENTATIVE FROM THE STATE OF FLORIDA

Mr. Chairman, we of the Second Congressional District welcome you to the Gateway City of Florida. We appreciate your having chosen our city for this hearing, and we hope you will receive much helpful information.

My testimony will be concerned with the need for waterway improvements in the Jacksonville area. There is in this area a portion of one of the most important projects in the entire country. I refer to the completion of the Intracoastal Waterway from Trenton, N.J., to the Mexican border by constructing the cross-Florida barge canal, authorized in Public Law 675, 77th Congress (July 23, 1942). When this project was authorized, it was felt by Congress that its defense value alone was sufficient to justify its authorization, and there was no contention that its cost would be paid for by resulting economic benefits. However, on July 23, 1958, the Army Corps of Engineers announced that an economic restudy of the project had resulted in a finding that the benefit-cost ratio was 1.05 to 1 at that time. A later study by competent engineers and economists developed additional economic benefits which raise this ratio to 1.4. With the spectacular industrial growth of Florida and the Southeast, the ratio can reasonably be expected to show a continued increase.

As remarkable as the rise in economic justification has been, however, it should not be allowed to obscure the canal's defense significance. In this connection, General J. L. Person, Assistant Chief of Engineers, has said:

"During World War II, many cargo ships and tankers were lost off the coast of Florida due to enemy action. Many of the cargoes that were lost would and could have been moved by barge or small freighter had the barge canal been in existence at that time. The savings in lives, ships, and valuable and critical cargoes would have been great."

This inland water route is not an alternative means of providing for the wartime petroleum supply of the Eastern United States; it is the only practical means of providing for this supply. Without it, we are faced with the practical

certainty that we shall be unable to make wartime delivery of one-half the minimum amount of petroleum required for the military and civilian war effort in the Atlantic area.

An extremely important project in our area is deepening Jacksonville Harbor from 34 to 42 feet. This project is urgently needed if this harbor is to handle the larger, deeper draft vessels which are being constructed and utilized in ever-increasing numbers. It is amply justified by the rapid growth of seaborne commerce through this harbor, by the important role which the harbor plays in the economy of the Southeast, by its contribution to national defense, and by the prospect of increased customs and income taxes if this improvement is carried out.

I should also like to call to the committee's attention, the problem which is faced in the lake region of Clay County with regard to the water level in the lakes and streams of that area. Several years ago there was a prolonged dry period and the water level became unusually low. At present, the water level is high again due to heavy rainfall this year. A solution is needed which will make it possible to hold in this basin the waters which accumulate in years of ample rainfall in order that the water level may be preserved for dry years and released in case of flood conditions which have also at times occurred.

Finally, we have a problem in this area resulting from the periodic flooding of McGirts Creek. The Senate Public Works Committee, in issuing a favorable report on a bill authorizing a survey of McGirt's Creek, said:

"Overflows from the creek, which have occurred as often as three times in 1 month, flood residential subdivisions and homes, truckfarms, drown cattle, overflow roads and streets, wash away fences, and prevent or delay marketing of produce. The water frequently stands on the private property for several days, creating bad odors and a health menace.'

Thank you again, Senators, for permitting the residents of this area to discuss with you today our problems regarding water resources.

Mr. THOMAS. Thank you, Congressman Bennett.

Next I would like to call upon Mr. Henry Buckman, who is an eminent Jacksonville engineer. He is consultant to the Florida Ship Canal Authority and Florida Inland Navigation District. He is president and the only noncongressional president of the National Rivers and Harbors Congress in the history of that organization.

Mr. Buckman.

STATEMENT OF HENRY BUCKMAN, CONSULTANT TO THE FLORIDA SHIP CANAL AUTHORITY AND FLORIDA INLAND NAVIGATION DISTRICT, PRESIDENT OF THE NATIONAL RIVERS AND HARBORS CONGRESS

Mr. BUCKMAN. Thank you, Mr. Thomas.

Senators, I have been warned not to make a statement but I am permitted to request permission to insert in the record a statement on behalf of the Canal Authority of the State of Florida with respect to the national features of characteristics of the National Intracoastal Waterway from Trenton, N.J. to the Mexican border, of which this stretch across Florida now authorized, commonly referred to as the cross-Florida barge canal will be the completing step.

I have also to request permission to insert in the record a statistical compilation made by the Florida Power Corp., which does not relate to any particular water resources project but which I think I can advise the committee has a great deal of valuable data upon which projections for such projects can be made. They relate to growth figures in the State of Florida. I should like permission to insert that into the record.

The CHAIRMAN. It will be inserted if provided.
Mr. BUCKMAN. Thank you, sir.
(The prepared statements follow:)

STATEMENT OF HENRY H. BUCKMAN, ENGINEERING COUNSEL, THE CANAL AUTHORITY OF THE STATE OF FLORIDA

THE CONTINUOUS INTRACOASTAL WATERWAY FROM THE DELAWARE TO THE RIO GRANDE AND ITS RELATION TO THE NATION'S WATER RESOURCES

If the committee please, my name is Henry H. Buckman. I am engineering counsel to the Canal Authority of the State of Florida.

This is a continuation of the case of the completion of the otherwise existing and continuous Intracoastal Waterway from the Delaware River to the Rio Grande by construction of the remaining reach across northern Florida as recommended by the Chief of Engineers and authorized by the Congress.

I shall not attempt to improve upon the very able presentations which have already been made. I feel that there is no need to go over the ground which has been covered with respect to the key nature of this facility in an integrated system of waterways in Florida necessary to the development of our State.

But I ask for a few minutes to emphasize the national aspect of this channel which is the spillway for most of the precipitation on the United States east of the Rocky Mountains, and the potential use of which is the end use of most of the water we may be able to control and conserve in that vast area.

The fact that this waterway is also fed by the sea does not alter in the least the fact that when it is made continuous it will hold a significance for any water resources program, second only to the biological objectives of such.

The truth of this becomes evident when we consider the relation of transportation to the development of any given population group. Our modern society is so constituted that it cannot achieve healthy growth in the absence of economical means for the movement of the products of labor over very considerable distances. We may provide adequate water for direct human and animal consumption, for the growing of crops, and for the needs of industry and sanitation in any given area, but the population of that area cannot flourish competitively unless it is served by the most economical transportation complex, and such a complex must include, where possible, inland water transport.

In this perspective it will be seen that no national planning with respect to our water resources can provide for optimum obtainable results unless it comprises the most effective use of all available water for inland navigation. There is no need to belabor this point. But it should be noted that the making continuous of the Intracoastal Waterway will increase the scope and validity of most existing and contemplated water resources programs east of the Continental Divide, excepting in New England and parts of New York.

This trunk artery will afford a route for the inland water-borne commerce of 35 States, and will serve a tributary drainage area greater than the combined basins of the Mississippi, the Missouri, and the Ohio. There is no other single element in our use of water that can approach it in national character. Only by this means is all-inland-water transport practicable between Miami and Omaha, between Corpus Christi and Philadelphia, and between New Orleans and Minneapolis and Pittsburgh. Only by this means can the value of other use of our water resources be so generally enhanced.

The continuous Intracoastal Waterway will measurably increase the potential transportation economy of 316 of our 436 congressional districts, comprising 70 percent of our population. Even now, in its discontinuous state it is carrying more tonnage than is the Panama Canal and more than twice the tonnage of the St. Lawrence Seaway. There can be little doubt that it is destined to bear more freight than any other waterway in the world, not excepting the Don-Volga Canal connecting the Caspian Sea and central Asia with the Black and Mediterranean Seas.

The facilitation of the interchange of goods between communities in time of peace has a deeper significance than the promotion of the normal welfare of those communities. By nourishing their productivity and economic stability it increases their defense potential. The necessity for this is the other basic need which demands the inclusion of fully developed inland water transport in water resources planning. Our defense potential is served by inland navigation in two ways. One is the increase in our agricultural and industrial ability to wage

war. The other is the provision of all-important internal lines of supply. About this last-named feature, I should like to speak very briefly.

I bear in mind that in an allout nuclear weapon war it is definitely possible for the American state to disappear within a matter of weeks, in which event we shall have no need for supply lines. But it is beginning to appear that warfare with conventional explosives is the more probable outlook. At least that is apparently the view taken by the military establishments of this and other countries in their preparedness measures. Emphasis continues to be placed preponderantly on improved means for the landing of more or less conventional explosives on targets rather than on improved means for the destructive release of atomic energy. In this case, the maintenance of adequate internal lines of supply will continue to be essential to survival.

We have four frontiers to supply, both for defense and for expeditionary operations. The more exposed of these frontiers are the Pacific and Atlantic coasts. With respect to these two, our inland transport facilities are presently critically inadequate.

With respect to the Pacific frontier, except for a few pipelines, we are wholly dependent upon railroads for large-scale inland transport. All of these pass through one or more of only six junctions which control the rail approaches to the coast. All six are now within submarine missile range. In World War II, the railroads were taxed to their utmost capacity to carry 60 percent of the necessary tonnage. The other 40 percent had to move via the Panama Canal. Due to the advent of the high-speed atomic-powered submarine, and quite aside from any use of nuclear weapons, it has now become fatuous to expect any consequential use of the Panama Canal in the next major war. Either the canal itself will be blocked, or few ships will ever arrive at the entrances. The probability of this will become apparent when it is recalled that in World War II, during the period when Rommel was dominant in the north African theater, British supply ships could not approach within a thousand miles of the Mediterranean entrance to the Suez Canal. The necessity for supplying Malta, some 1,100 miles from Suez, entailed losses in their supply fleets of as high as 85 percent.

Just how we are going to supply our Pacific coast in the next world war is a problem which remains to be solved. Whether that frontier can be held after use of the Panama Canal is denied us is an open question. However, it is certain that by a combination of the continuous Intracoastal Waterway, the Mississippi River, and gulf ports, and the western rail lines, it would be possible to substantially improve the situation which inability to use the Panama route would bring about.

With respect to the Atlantic frontier, our internal supply lines are also critically inadequate for a major war effort. This is true with respect to the transport of all commodities, but our position is especially critical with respect to the movement of petroleum.

The considerations which make imprudent any expectation of a substantial use of the Panama Canal during a future world war also govern the chances for successful sea-borne deliveries at Atlantic ports, whether via the Gulf-Atlantic lanes or from overseas. It is known that our military planners feel that we cannot prudently base plans for a future world war on any expectation of receiving petroleum supplies via ocean tanker, and that we should be prepared to rely upon North American sources and inland movements.

This conclusion is forced upon us by our experience in World War II when our Gulf-Atlantic shipping was substantially wiped off the seas by enemy submarines. The committee will recall that in these lanes alone we lost 167 tankers and dry cargo ships in a period of some 18 months, and that the ensuing shortage of petroleum on the east coast resulted in a grave threat to our war effort. At the present time the prospect of complete stoppage of ocean-borne petroleum supply in the event of a major war is too real to be ignored.

According to data furnished by the Department of the Interior and the Interstate Commerce Commission, based on the statistics of 1957, we now bring annually to the eastern seaboard, for use in that area, approximately 1¼ billion barrels of crude and products. Of this, about 94 percent is by ocean tanker. In the event of a major war, the inland transportation of petroleum will have to be increased by at least this amount, 1 billion barrels annually.

These same statistics and the records of the Petroleum Administration for War show that the maximum capacity which the rail carriers were able to develop during World War II (with 15 percent more tank cars than they now have) was for a short period at the rate of 267 million barrels per year.

Today, if we allow for the increase in pipeline capacity since World War II, and if we assume that the railroads are able to deliver at their peak rate of World War II, and if we assume further that the Big Inch line can be reconverted from gas to liquid (an altogether impractical assumption), and if we can count on the ocean tankers to equal, in the face of enemy atomic submarines, their deliveries in World War II (a second impractical assumption), our best expectation is that the east coast will receive about 50 percent of its petroleum requirements. The other 50 percent, and more, could be delivered over the continuous Intracoastal Waterway if it is open for any considerable time before the advent of war. On the other hand, it is an economic impossibility to overbuild our pipelines and our supply of tank cars in peacetime, and it is a physical impossibility to do this in wartime. We know the effort and drain on our resources required to build the one Big Inch line during World War II. To build the necessary equivalent of six such lines during a future major war would be entirely impracticable. This problem may be economically solved by timely construction of the reach of the Intracoastal Waterway across northern Florida. There does not appear to be any other solution.

Finally, I call to your attention the fact that the usefulness of the continuous Intracoastal Waterway in time of war has been consistently recognized by Congress and by the Military Establishment. After a study of plans for both a ship channel and a barge channel across Florida to make the Intracoastal Waterway continuous, the Joint Chiefs of Staff included in their report to the Secretary of Defense the statement that "Either of these projects will provide an additional and shorter line of communication between the gulf coast and the east coast and would thus reduce exposure of shipping to submarine attack."

The Chief of Engineers has reported:

"During World War II, many cargo ships and tankers were lost off the coast of Florida due to enemy action. Many of the cargoes that were lost would and could have moved by barge or small freighter had the barge canal been in existence at that time. The saving in lives, ships, and valuable and critical cargoes would have been great. Similar and comparable savings would also accrue in future serious national emergencies if the canal is in operation."

The special act of Congress which authorized making the Intracoastal Waterway continuous states expressly that the act is passed "in order to promote the national defense."

This facility is a time-tried and well-considered plan, the value of which is recognized by the legislative and executive branches, and it is affirmatively supported by a large body of public opinion. We submit, therefore, that its prompt completion should be an integral part of first importance in all national water resources planning.

Mr. Chairman, I request permission to file for the record my complete statement with the accompanying exhibits.[1]

THE SHIP CANAL AUTHORITY OF THE STATE OF FLORIDA,
Jacksonville, Fla., January 12, 1960.

Hon. ROBERT S. KERR,
Chairman, Select Committee on National Water Resources, U.S. Senate, Senate Office Building, Washington, D.C.

DEAR SENATOR KERR: We would be grateful if you would admit into the record of the hearing of your select committee held in Jacksonville on December 3, 1959, our attached comments upon the allegations made by the Atlantic Coast Line and other railroads with respect to the cross-Florida barge canal project.

In addition, permit us to refer your committee to the testimony with respect to this matter given before the Subcommittee on Appropriations for Public Works of the Senate Committee on Appropriations, by Brig. Gen. John Person, Assistant Chief of Engineers for Civil Works, as reported on pages 2,986 to 2,989, inclusive, and comments of the chairman of that subcommittee, Senator Ellender, thereon.

With kindest regards.

Sincerely yours,

R. MALCOLM FORTSON,
Managing Director.

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[1] On file with the committee.

WASHINGTON, D.C., *January 6, 1959.*

Rear Adm. R. MALCOLM FORTSON (Retired),
Managing Director, The Ship Canal Authority of the State of Florida,
Jacksonville, Fla.

DEAR ADMIRAL FORTSON: In response to your request I have examined the preliminary analysis, purporting to be made by a committee of the Association of American Railroads which deals with the recently completed economic restudy of the cross-Florida barge canal project carried out by the Chief of Army Engineers.

The individual railroads affirmatively supporting this analysis are not named therein. The address of the subcommittee sponsoring it and the first paragraph of appendix B indicate that the Atlantic Coast Line Railroad is taking an active part in this opposition to the cross-Florida barge canal.

To an engineer, much of the data in this analysis is patently immaterial, improperly related to the subject project, or inapplicable, and does not appear to merit detailed discussion.

However, I think that some general comment is in order and will be clarifying. I have, therefore, prepared the attached memorandum which embodies my views with respect to the contents of the document in question and which carries some observations which I trust will assist to an understanding of the issues.

Sincerely,

H. H. BUCKMAN,
As Engineering Counsel,
The Ship Canal Authority of the State of Florida.

MEMORANDUM

Date: January 6, 1959.
To: Rear Adm. R. Malcolm Fortson (retired), managing director the Ship Canal Authority of the State of Florida
From: Henry H. Buckman, engineering counsel
Subject: The preliminary analysis by the Association of American Railroads of the Chief Engineers restudy of the peacetime economics of the cross-Florida barge canal.

SUMMARY OF THIS MEMORANDUM

The subject analysis is issued from an office of the Atlantic Coast Line Railroad address by the Zone 3 Subcommittee on the Cross-Florida Barge Canal of the Committee on Waterway Projects of the Association of American Railroads. It reflects the traditional opposition of the railroads in general to all competing inland water transport and to the above-named project in particular. This analysis is of a piece with the tactics usually employed by the railroads against other such projects. On its face, the document deals only with the restudy of the peacetime economic benefits of the project. It omits all reference to the defense values of the canal which are recognized in the restudy but which are not assessed in dollars.

The analysis thus inferentially presents the peacetime economic values of the project as its only values, purports to find that these represent a benefit-cost ratio much less than unity and alleges therefore that the project is unjustified. The document omits any mention of the very material fact that its defense values are the justification of the project expressed by Congress in the authorizing act. While disclaiming any intent to do so, the analysis alleges both incompetency and a lack of integrity in the Corps of Engineers in its evaluation of such projects in general as well as of the cross-Florida barge canal. As opposed to the Chief of Engineers' restudy finding of a cost of $170 million and a peacetime economic benefit-cost ratio of 1.05, the analysis alleges a cost in excess of $522 million and a benefit-cost ratio of 0.25. In the opinion of engineering counsel, the data, assumptions and argument adduced do not support these allegations, nor any conclusions that the Chief of Engineers' findings of peacetime economic benefits are too high, or that his cost estimates are too low. Too much of the material presented in the analysis is patently immaterial, incomplete, inappropriately related to the project or altogether inapplicable. It is the opinion of engineering counsel that, for these reasons, no weight can be reasonably attached to the assumptions and conclusions set forth therein.

Any clarifying discussion of the subject analysis requires a clear understanding of the real issues. These include:

I. The basic issue, which is the alleged competition between rail and inland water transport. The principal question is, Is the public interest better served by fostering all forms of transport to the extent of their respective economic potentials, or by fostering rail transport only at the expense of other forms?

Although there are probably railroad managements which take an enlightened view of the role of inland water transport, and correctly consider it as contributing to the development of commerce in which the railroads share, the traditional position of the Association of American Railroads has been one of vigorous and sustained opposition to major channels for such transport. Their opposition to the cross-Florida barge canal is of long standing, and follows the routine of their continuing opposition to inland waterborne movements, except that the potential nationwide influence of this particular project for the improvement of the economy of transportation generally is so great that it has generated an unusually determined campaign of obstruction the part of these railroads. Over a long period of years the records of the Office of the Chief of Engineers and those of the House and Senate committees having jurisdiction, show the railroads coming forward to oppose proposals for channels for inland water transport, setting forth objections that are of the same general pattern as those advanced by them in the present instance. They opposed the Panama Canal, the St. Lawrence Seaway, the Illinois waterway, the Red River project, the Tennessee-Tombigbee project, and almost all great waterway projects. They have, from the beginning, opposed any navigable water route across northern Florida which would make possible economical interregional inland water transportation.

It is well to repeat that the underlying issue is the alleged competition between rail and inland water transport, and whether the public is better served by supporting the former at the expense of the latter, or by a policy which includes the development of all economical forms of transport.

In this connection it is pertinent to recall the complaint of the rail carriers that the improved waterways are furnished free to the water carriers by the Federal Government, and that these latter carriers are thus the recipients of a subsidy which is unfair to the taxpaying railroads. This claim is invalid in view of the fact that the railroads themselves have been and still are the beneficiaries of Federal subsidies, in one form or another, which total more than all the Federal funds ever expended on inland navigation channels. These Federal subsidies to the railroads include:

(*a*) Land grants by the Federal Government of approximately 10 percent of the entire land area of the continental United States as its exists today, exclusive of Alanka. While some of this land was forfeited by the railroads, and while some of it was never patented, the amount which had been actually patented to the railroads by June 30, 1910, was equivalent to nubstantially 6 percent of the land area of the United States, and there were still available to them an additional 2 percent, making a total of 155 million acres. This is exclusive of grants by Texas which amounts to approximately one-sixth of the area of that State, or about 32,400 acres. Thus, the railroads have been subsidized by land grants totaling approximately 10 percent of all the land in this country, or some 187,400,000 acres.

(*b*) Continuing subsidies in the form of Federal funds expended on the creation and improvement of inland navigation channels which have been, in general, beneficial to the rail carriers as a whole.

(*c*) Subsidies in the form of Federal funds expended for harbor improvements resulting in direct benefits to the rail carriers by increasing their traffic to and from the ports.

(*d*) Subsidies in the form of Federal funds expended for flood control, relieving the railroads of the necessity, in many cases, of protecting their lines by the expenditure of their own funds.

(*e*) Miscellaneous special Federal subsidies, direct or indirect, as an example may be cited the fact that in the year 1944 (World War II) the Federal Treasury was paying a subsidy to the railroads (via the oil companies) of $253 million annually in connection with the movement of petroleum.

(*f*) Every alteration (up or down) in the rate structure permitted by the U.S. Interstate Commerce Commission which effects for the benefit of the rail carriers a decrease in the economy of the movement of any segment of commerce is in essence a Federal subsidizing of these carriers.

(*g*) Federal subsidies to U.S. flag ocean shipping which increases the volume of the haul by the rail carriers to and from the ports is also a subsidy for those carriers.

It is beside the point to claim that all of these subsidies may have been wise public policy. The meat of the matter lies in the fact that the railroads have received far more in Federal subsidies than have the public instrumentalities for inland waterborne commerce which they oppose and endeavor to obstruct. For this reason they cannot come before the Government "with clean hands," pleading in effect that Federal expenditures for the improvement and maintenance of public inland water transport channels are unwise and inequitable because such expenditures are allegedly opposed to their interests.

II. A secondary issue is raised by the proposition put forward in the analysis that the subject project is not justified because the peacetime economic benefits found by the Chief of Engineers in his restudy are too high and that his cost estimates are too low.

It is necessary to bear in mind that, by due process, the construction of this project is now the law of the land. The proposition above stated boils down to a proposal to repeal the act of Congress which authorized this project. The tremendous significance of such a step for all presently authorized, and, as yet, unconstructed projects for all river and harbor, flood control, and other water use and conservation throughout the Nation, should give pause to all concerned with the relation of the overall transportation network to the public welfare.

With respect to the cross-Florida barge canal, the only point not already determined by law is the time at which construction shall begin. Congress has long since studied, evaluated, and authorized this project on the basis of its value to the national defense plus a peacetime economic benefit-cost ratio of 0.19. To support the project, no such ratio greater than 0.19 is required to be shown by the restudy by the Chief of Engineers or by the subject analysis or by any other examination.

Appropriations for the project are now lawful, appropriate, and in accordance with the express permission of Congress. This is true regardless of any findings by the Chief of Engineers in his restudy, or any findings alleged in the subject analysis.

The restudy was undertaken by the Chief of Engineers on his own initiative (requesting and receiving from Congress the funds for this purpose) in order to bring down to date the peacetime economic data on the project for intra-office use. Had this restudy found the project not justified by its peacetime economic value alone, this fact of itself could not have disqualified it, nor could it have altered the fact that Congress has authorized the project expressly to promote the national defense and with the understanding that the criterion of justification by peacetime economic value alone is not applicable to it. The same *consideration governs the subject analysis or any other study of the* project which seeks to invalidate its justification by attempting to minimize its *peacetime economic value.*

As a matter of fact, the Chief of Engineers' restudy finds that the peacetime economic benefits of the project have increased to more than 5 times what they were found by him to be in his original study made more than 16 years ago and which, taken in conjunction with its defense values, Congress accepted as adequate justification for its authorization. That is to say that the present restudy shows that during those 16 years the commerce potentially served by this project *has so increased and is so increasing as to result in a benefit-cost ratio of* 1.05 as against the 0.19 ratio formerly found. It is evident that any increase at all of the 0.19 ratio serves to increase the justification of the project determined as necessary by Congress.

It is to be noted that the analysis by the Association of American Railroads finds that there has been an increase of approximately 31 percent in the economic phase of the project's justification determined by Congress as adequate. The analysis finds an increase in the benefit-cost ratio from 0.19 to 0.25. Thus, the railroads themselves testify to a substantially greater present justification than Congress has seen fit to require.

It is well to repeat that Congress never imposed on this particular project the usually imposed condition that it yield a peacetime economic benefit-cost ratio of unity or greater. On the contrary, Congress accepted a ratio of only 0.19 because of the absolutely necessary defense function of the project. By testifying to an increase of some 31 perecnt in its economic benefit-cost ratio, the rail carriers submitting the subject analysis are bound to the proposition that the justification of the project judged by Congress to be sufficient in 1946 is greater now than it was then.

A careful scrutiny of the subject analysis fails to reveal either logic or competent evidence that would justify a conclusion that the Chief of Engineers' finding of a peacetime economic benefit-cost ratio of 1.05 is too high, or that his cost estimates are too low. Even if this were not the case, the point would be academic since both the Chief of Engineers and these rail carriers agree on the cardinal point that, regardless of specific magnitudes, the peacetime economic value of this particular project is greater than that determined by Congress to be sufficient in view of the essentiality of its defense function.

The question, Is the expenditure of the taxpayers' money for the construction of this project in accord with sound public policy? cannot be furnished with an informed answer, or even intelligently examined, without full consideration of the necessity for the completed intracoastal canal (which this project will afford) to provide in time of war a safe inland navigation route between the gulf and Mississippi Valley States and those of the Atlantic seaboard. This protected route for waterborne commerce will avoid the otherwise necessary exposure of our ships and cargoes on the alternate route over the open sea to losses from enemy submarine attack on a scale which may well prove disastrous to our defense. The purported evaluation of the project by the analysis put forth by the Association of American Railroads omits this predominant consideration altogether.

It will not serve to say that the subject analysis necessarily omits consideration of defense values since it deals only with economic values measurable in dollars. Having failed to meet and overcome this consideration, the analysis, on its own showing, fails to sustain its major premise, i.e., that the project should not be constructed.

Entirely aside from the invalidity of the assumptions, data and argument presented in the subject analysis, not only is there no warrant in fact for the attempt to rest the burden of the justification of his project on its peacetime economic value alone, but such an evaluation has been made inadmissible by existing law. It is well to restate that Congress authorized the cross-Florida barge canal in order to promote the national defense.

While the defense of his own findings may be appropriately left to the Chief of Engineers, it is in order to point out the fallacious nature of the major allegations in the subject analysis. The following are examples:

(*a*) That the fact that the expected total movement of some commodities via the subject canal, as determined by the restudy, is 500 percent greater than the actual 1957 total movement of these same commodities over the entire Mississippi system, over 5,500 miles of highly developed waterways running through the heart of the country and that this alone appears to condemn the project.

A table on page 10 of the analysis is adduced as proof of this. This table is quite obviously a self-servicing compilation of commodities selected to yield the answer desired. This device is as naive as it is punitive and serves only to render suspect the good faith of the document. It is only necessary to point out that, by use of this device, the picture can be reversed by appropriate selection of other commodities to show that the estimated 1957 movement of those other commodities over the Mississippi system was 500 percent (or more if desired) greater than the restudy finds will move over the subject canal.

(*b*) That the cost of the project will ultimately exceed one-half billion dollars.

This fallacy is so transparent that disection is really unnecessary. What the analysis does in this case is to take only the expense items, i.e., the first cost of the project (which is stated as $184,368,000) and add to it 50 years of annual charges, i.e., $7,365,000 for each year, and then report the total as the cost of the taxpayer over the 50-year period in excess of $552 million. This conclusion is arrived at without any allowance whatever in the accounting for the estimated annual benefits of $7,758,000 which would be designated as revenue in private enterprise bookkeeping. It is not difficult to imagine the effect on their security markets if this astonishing bookkeeping were applied to the finances of the railroads. The prospect of these companies going further and further into debt each year because their operating and other annual charges were cumulative, with no offset for revenue received would, of course, be totally destructive.

A proper reporting of the Chief of Engineers' cost accounting will show that at the end of the 50-year period, the project will stand as a fully paid for prop-

erty of the taxpayer, in good condition and still in profitable use; the taxpayer's capital investment will have been returned to him with interest over the entire period and, in addition, he will have received dividends of some $20 million.

(c) That the railroads had a right to be heard at a public hearing in the course of the restudy, but that no such hearing was had, and because of this their interests have been prejudiced.

There have been a number of public hearings on this project before the appropriate committees of the House and Senate over a number of years. At at least two of these hearings, representatives of the railroad interests did appear and placed in the record their opposition. These were the hearings before the House Committee on Rivers and Harbors in May 1942, and the hearing before the House Committee on Appropriations in May 1958. Of course, these appearances for the railroads were before the presently discussed restudy by the Chief of Engineers, and it is interesting to note that the tenor of their opposition was substantially the same then as it is now, after the restudy has been made. It is difficult to escape the conclusion that the findings of the Chief of Engineers in his restudy are merely the occasion and not the reason for the presently expressed opposition of the railroads to the cross-Florida barge canal.

The implied prejudicing of the railroads' interests, because the Chief of Engineers did not hold a public hearing, has no weight. No opportunity could have been afforded them by such a hearing which they and all others interested have not had. They have been free at all times to submit their views to the Chief of Engineers and the opportunity to discuss the Chief of Engineers' findings, as well as to submit data and argument before and after these were made, have been enjoyed as fully by the railroads as by any other parties at interest.

III. A third issue raised by the analysis is the charge made that the Corps of Engineers, both in general and in this instance in particular, have been guilty of a lack of integrity and have shown a lack of competency in its examination of and reporting on projects of this nature.

This is an issue between the Association of American Railroads and the Corps of Engineers. It seems an altogether reasonable assumption that the corps is capable of making its own defense. Engineering counsel places entire confidence in the integrity and competency of the corps, a confidence gained during 30 years of acquaintance with its procedures and personnel. It is believed that the discussion of this issue may be most appropriately left to the corps and those bringing the charges.

Senator HOLLAND. Mr. Chairman, I would like the record to show one additional thing which I learned the hard way when I was serving as Governor during the war period, on the point made by Congressman Bennett about the inability to supply the east coast area with their oil requirements. A crash project was initiated by the Government running from the west coast of Florida, Port St. Joe over to Jacksonville, to put through at an enormous expense a pipeline during the early months of the war to supply some of the east coast with the oil and gasoline it needed and not adequate to supply at all the present needs. That was taken up after the war and I certainly support the conclusion stated by Congressman Bennett that there is no economical way to solve that particular problem that compares in smallness of cost and assurance of continued operation with the cross-State barge canal, which is just one of the facets of its use.

Mr. THOMAS. Thank you, Senator Holland. Next I would like to introduce Col. Herman W. Schull, who was formerly the district engineer in this, the Jacksonville district.

He formerly served as Lieutenant Governor of the Panama Canal Zone and he is presently chief engineer and general manager of the Florida Inland Navigation District.

Colonel Schull.

STATEMENT OF COL. HERMAN W. SCHULL, CHIEF ENGINEER AND GENERAL MANAGER OF FLORIDA INLAND NAVIGATION DISTRICT

Colonel SCHULL. Mr. Chairman, I have been cautioned that I have just about a minute to make a short presentation to you. I have several statements which I would like to have entered in your record if you can receive them. They will document the need for the development of this comprehensive system of waterways that we have in Florida.

(The statements follow:)

STATEMENT OF HERMAN W. SCHULL, JR., COLONEL, CORPS OF ENGINEERS, U.S. ARMY, RETIRED

WATERWAYS FOR FLORIDA'S EXPANDING ECONOMY

Gentlemen, I'm particularly glad to present a statement on waterways for Florida's expanding economy to this select committee. There is involved here a need for policy decisions on water transportation which will affect the development of Florida and the country as a whole. The waterways needed by the State for its continued development are also missing links in the national system of waterways. They are essential for insuring the continued growth of productive capacity required for our expanding population and even for the survival of our free economy.

The intracoastal and inland waterways of Florida have been authorized by the Congress as separate projects by many legislative acts adopted between the years 1938 and 1945. The location and channel dimensions of the waterways are shown on the Florida waterways map.[1] Taken as a whole, these projects constitute an integrated program of waterways interconnecting within the State of Florida and interconnecting with the waterways of the gulf coast, Mississippi Valley, and eastern seaboard.

The program is well conceived and will meet the requirements of water transportation for local traffic within the State and for long-haul traffic through the State. The traffic pattern for the long-haul movements of prospective traffic are shown on the waterways map. It is significant that most long-haul traffic requires the use of several waterways of the system between origin and destination of the traffic. Since traffic should be able to move without transshipment and excessive rehandling, the waterways are mutually dependent and the maximum usefulness of any one hinges on the completition of the system as a whole. For example, animal feed, fertilizer materials, and newsprint from the Middle West for south Florida would use the gulf intracoastal, the cross-Florida barge canal, and the Atlantic intracoastal. Steel products from Sparrows Point, Md., would use the Atlantic intracoastal, the cross-Florida canal, and west coast waterway to Tampa. Each of the several projects must be viewed as a link in the overall system.

Progress in carrying out the construction of this program has been most disappointing. In the 15 years since the projects were outhorized, only 15½ percent of the program has been accomplished. The system is not yet functioning for there are too many missing links. The cross-Florida barge canal has not been started. The Atlantic intracoastal has been deepened only to Fort Pierce, and the west coast intracoastal has just gotten under construction again after a lapse of 10 years. The status of the various waterways, as to authorization, estimated cost, and percentage of completion, is shown in the accompanying exhibit No. 1. It is to be noted that expenditures on the program in the past 5 fiscal years have been less than $3 million, which is 1.3 percent of the cost of the total program. At this rate of progress, completion of the program will require more than 60 years.

All the authorized projects in the program were adopted after thorough analysis and recommendation of the U.S. Engineers. The projects were adapted to meet definite current transportation requirements. The savings in

[1] Retained in committee files.

transportation costs from each project have been found to exceed the costs of construction by a wide margin. However, the projects were studied piecemeal, project by project. An overall analysis of the waterways on a regional basis of the waterways in the entire system would show a still greater excess of savings over costs. The program constitutes a valuable national resource which is now going to waste because the authorized program has not been implemented by construction.

There is one important waterway of the system which has not yet been authorized by the Congress. This is the Sanford Titusville Canal which links the upper St. Johns River with the Atlantic intracoastal at Titusville. This canal is only 40 miles in length but will save 113 miles for traffic to or from south Florida via the cross-Florida canal. The commodities that could move from west Florida and midwest origin points by barge via the cross-Florida barge canal, if freight rates and service were satisfactory, include newsprint, oils and greases, steel, fertilizer, and animal feeds. The quantities currently consumed from western points as estimated by the University of Miami on an annual basis are as follows:

Item:	*Short tons*
Newsprint	50,000
Lubricating oils and greases	60,000
Animal feeds	175,000
Fertilizer materials	170,000
Steel	25,000
Total	480,000

Detailed traffic studies of the movement of the indicated commodities have not been made, although shipping points have been identified. The transportation savings are believed to be substantial now, and such savings would grow with the rapid industrial development of south Florida.

The prospective traffic for several waterways of the system have been given detailed study. In all of them it consists of short-haul local traffic in petroleum products, sand, gravel, and stone, and building materials, and long-haul traffic. The latter traffic is of great variety and consists of chemicals, paper products, steel products, animal feeds, fertilizers, roofing materials, tile, metal scrap, and other bulk commodities required for agriculture, construction, and manufacturing.

In a statement of this kind it would be inappropriate to list the hundreds of commodities which would move over the system. As examples of prospective annual traffic which would move today, if the system were complete, the cross-Florida barge canal would carry 860,000 tons and the east coast Intracoastal waterway would carry at least 1,100,000 tons. The potential traffic is the average annual traffic over the life of these waterways which, in their economic studies, the Corps of Engineers assumes to be 50 years. This figure will be much higher than the immediately prospective tonnages given above, since population, agricultural production, and industrial production are growing each year. The potential traffic for these two waterways has been estimated from the growth trends of population, agriculture, and value added by manufacturers. Local traffic was considered to be related to the growth of Florida's economy and through traffic to the growth of the national economy.

On the basis discussed above, potential traffic for the cross-Florida barge canal is found to be 2,400,000 tons, which represents an annual growth of 3.2 percent and the potential traffic for the east coast intracoastal would be 4 million tons, which is an annual growth of about 5 percent. The benefit-cost ratios for these two waterways, based on current studies, are 1.4 for the cross-Florida barge canal and 5.25 for the east coast Intracoastal Waterway. If these two waterways were studied as parts of the Florida system, the transportation savings would be greater, since each would receive traffic from parts of the system as a whole which has not yet been constructed. Correspondingly the benefit-cost ratios would be higher. It is evident that for a true economic analysis the system as a whole must be evaluated.

As an indication of the immediate response of industry and commerce to intracoastal waterway improvement, we have only to examine the growth of traffic on the gulf coast waterway and along the Atlantic coast waterway. These waterways are both extensive systems in themselves. Each is more than 1,000 miles in length and each carries millions of tons of traffic. All sec-

tions of these two waterways have shown an annual increase in traffic since their improvement to 12-foot depth. This is shown in exhibits Nos. 2 and 3. The lowest annual rate of growth was 5 percent in South Carolina on the Atlantic intracostal and the highest annual rate was 25 percent from Apalachee Bay to Panama City on the gulf intracoastal. The explanation for these almost phenomenal traffic growths is that industries which consume quantities of fuel oil, chemicals, and bulky raw materials quickly take advantage of transportation savings when waterways are improved by locating plants along such waterways.

The problem which I wish to emphasize before this committee is the lack of progress on the authorized program. It is of utmost importance that there be an orderly development of our water resources, including navigation, in order to provide economical water transportation for construction, industry, and agriculture. Without water transportation our productive capacity is reduced and higher transportation costs add to the upward pressure on prices. Successive Federal administrations have defeated the will of Congress by doing little or nothing about the navigation projects Congress has authorized in this State. The analysis of waterways project by project, instead of as a system of interconnecting waterways, has reduced the apparent prospective traffic and minimized transportation savings. Furthermore, opponents of waterway improvement, who for the most part are competitive transportation interests, are most active in their efforts to make waterways look bad. The net result is that the program for the Intracoastal Waterway in this State has nearly come to a halt. It is evident that some action by Congress is required to get it off dead center. This is the matter of policy which the select committee is requested to resolve.

EXHIBIT 1

Status of waterways as of June 30, 1960

Item No.	Waterway	Authorization date	Estimated cost	Amount expended to date	Amount expended in past 5 fiscal years	Percent complete
1	Gulf Intracoastal (Mobile, Ala., to Apalachee Bay, Fla.	1942	$5,960,000	$5,900,000	$117,000	99.0
2	Cross Florida Barge Canal	1942	170,100,000	1,480,000		0.9
3	Sanford-Titusville	(1)	(19,592,000)	0		0
4	East Coast Intracoastal (Fernandina, Fla., to St. Johns River).	1938	264,000	264,000		100.0
5	East Coast Intracoastal (St. Johns River to Miami).	1945	19,200,000	6,456,400	2,834,000	28.6
6	East Coast Intracoastal (Miami to Key West).	1945	3,100,000	200,000		6.5
7	West Coast Intracoastal (Caloosahatchee River to Anclote River).	1945	7,300,000	690,000		9.5
8	Okeechobee	1945	20,026,000	20,026,000		100.0
	Total [2]		225,950,000	35,000,000	2,951,000	15.5

[1] Not authorized.
[2] Sanford-Titusville Canal not included in total.

EXHIBIT 2

Atlantic Intracoastal Waterway (consolidated report) between Norfolk, Va., and Miami[1]*—Comparative traffic*

[Short tons]

Year	Norfolk, Va., to North Carolina State line	Virginia-North Carolina State line to South Carolina State line	South Carolina State line to Port Royal Sound, S.C.	Port Royal Sound, S.C., to Fernandina Harbor, Fla.	Fernandina Harbor to St. Johns River, Fla.	Jacksonville to Miami, Fla.
1948	475,237	1,073,718	930,918	271,911	456,502	436,244
1949	697,881	1,325,029	866,814	319,533	353,872	235,070
1950	738,720	1,255,096	1,006,183	316,612	376,185	207,029
1951	846,139	1,478,495	1,164,712	399,789	416,635	520,670
1952	926,388	1,516,984	1,208,870	542,901	520,142	514,736
1953	885,405	1,525,561	1,281,949	744,972	604,951	550,060
1954	1,045,725	1,542,986	1,197,373	820,883	638,602	630,667
1955	1,062,069	1,827,374	1,464,554	879,882	702,597	623,884
1956	1,085,652	1,892,160	1,540,004	974,906	687,268	1,451,200
1957	1,063,148	1,821,351	1,582,828	990,025	806,965	1,485,128
Average annual increase (percent)	9	6	5	15.5	6	15

[1] Project depth: 12 feet. Navigation season: Entire year.

EXHIBIT 3

Gulf Intracoastal Waterway between Apalachee Bay, Fla., and New Orleans[1]*—Comparative traffic*

[Short tons]

Year	Apalachee Bay to Panama City, Fla.	Panama City to Pensacola, Fla.	Pensacola Bay, Fla., to Mobile Bay, Ala.	Mobile Bay, Ala., to New Orleans, La.
1948			851,874	2,595,067
1949	189,451	624,730	924,372	3,109,808
1950	237,805	961,530	1,241,976	4,062,535
1951	290,710	1,118,317	1,642,887	4,340,070
1952	803,316	1,914,003	2,271,241	5,786,069
1953	409,997	1,921,978	1,899,575	5,902,614
1954	594,408	2,074,517	1,960,240	6,149,064
1955	797,246	2,134,922	2,485,345	7,228,874
1956	850,010	2,716,174	2,709,176	7,343,758
1957	1,110,003	2,721,405	2,828,267	6,995,865
Average annual increase (percent)	25.0	20.0	14.0	12.0

[1] Project depth: 12 feet. Navigation season: Entire year.

STATEMENT OF GLEASON N. STAMBAUGH, SR., CHAIRMAN, BOARD OF COMMISSIONERS, FLORIDA INLAND NAVIGATION DISTRICT; CHAIRMAN, PORT COMMISSION, PORT OF PALM BEACH

ATLANTIC INTRACOASTAL WATERWAY, JACKSONVILLE, FLA. TO MIAMI, FLA.

I am pleased to have this opportunity to make a statement about the need for Florida's Intracoastal Waterway system. Conservation and development of our water resources, particularly as they pertain to navigation, has been a lifelong interest. As chairman of the commission responsible for carrying out the State of Florida's obligation in the construction of the Atlantic Intracoastal Waterway and chairman of the port of Palm Beach, I am intimately familiar with the part that inland waterways and ports play in the developing of our economy.

The integrated program of interconnecting waterways, which others have discussed with you in detail, has been needed for a long time. Construction progress has been very slow. In the past 5 years less than $3 million have been expended by the Federal Government on this program. The intracoastal waterways are vital to Florida and the Nation as a whole.

I am most concerned, because of the elective positions I hold, with the Atlantic Intracoastal Waterway. This waterway is an important asset to the port of Palm Beach and is essential to south Florida, where I live and have my business, in providing economical transportation for the distribution of fuel oils and construction materials and for supplying chemicals, fertilizers and animal feeds needed by industry and agriculture.

The improvement of this waterway to a depth of 12 feet has been underway since 1950 and the job is less than 30 percent done. The deep channel now stops north of Fort Pierce and thereby fails to serve the south Florida metropolitan and agricultural areas. The navigation district, of which I am chairman, has purchased the right-of-way from funds raised by taxation and delivered the right-of-way and all spoil areas as requested to the U.S. district engineer. Our obligations have been fully met in every respect.

I believe the inland waterways are a resource that must be developed if our productive capacity is to keep pace with the growth of population and the rising standard of living. It's not sound public administration to neglect our waterways and require the public to pay high transportation costs and further add to the upward trend on prices. I urge you as a select committee to find a way out of the dilemma which threatens to leave us with unsatisfactory waterways for years to come.

Colonel SCHULL. The various projects have been outlined to you and pointed out on the map. They have all been authorized separately and they have been justified separately. If they were considered as part of the comprehensive system, a big system, their benefit-cost ratios would be very much greater but as the program developed they were worked out separately and they have suffered some by not being considered as part of a comprehensive system, because they won't work to their full effectiveness until you get all parts of the system done. As you will see, the through traffic to any part of Florida will use two or three or even four projects in this system.

Now, the system has been authorized more than 15 years now and the total estimated cost is about $225 million. Up to now about 15 percent of the system has been accomplished. In fact, in the last 5 years less than 1.3 percent of this system has actually been placed under construction. So you might say the work is sort of on dead center or maybe it is just getting started. It is certainly way, way behind and it is dreadfully needed now.

At the rate that it has been going since authorization it would take about 60 years to build it. Florida needs it very much now and so does the Nation.

The CHAIRMAN. I believe you would agree with me, Senator Holland, when I say that I am glad for every bit of evidence put into this record of the greater need than is being adequately met by current rates of appropriations that exists in Florida. This same problem has been expressed in other States also, and I am convinced that we not only are very far behind in meeting the current needs and the increasing ones which are before us, but that our efforts and our rates of appropriation are moving ahead at a rate which is so slow in comparison to the increase in requirements and the demands, that we are getting further behind all the time. One of the things that I hope may come out of the work of this committee will be a speeding up everywhere of the program of conservation and development of our water resources.

And nowhere has there been evidence of greater opportunity and greater need than we are receiving from you today.

Proceed.

Mr. THOMAS. Senator Kerr, we certainly appreciate those thoughts.

Senator HOLLAND. Mr. Chairman, I would like to supplement Senator Kerr's statement by emphasizing again that the trouble has not been in the Senate. The Senate has very wholesomely supported an increasing tempo of activity in this field. For instance, just last year the House eliminated the budgeted amount to continue the deepening of the east coast waterway down to Fort Pierce and the Senate very constructively enabled us to put that back into the bill. Funds with which to begin construction on the west coast waterway were put in the bill in the Senate with unanimous consent of the Senate and worked out in a lesser amount, $600,000 or thereabouts, in the conference. I just want to emphasize the fact that the Senate group has been keenly interested in the development of our resources, typified by Senators Kerr and Young, who were two of many who feel that way about the matter. That interest in the Senate has been continuous and I am sure will keep up. And I am delighted that this record is being made here as an emphasis to increased speed in the development of this integrated system of waterways in our State.

Senator YOUNG. I would like to say that is the understatement of the year. The Senate did not reinsert it. Senator Holland did.

Mr. THOMAS. Senator Kerr, I would like to introduce finally Col. George Kumpe, executive director of the West Coast Navigation District.

Colonel Kumpe.

STATEMENT OF COL. GEORGE KUMPE, EXECUTIVE DIRECTOR, WEST COAST NAVIGATION DISTRICT

Colonel KUMPE. Senator Gibbons' testimony will include a written statement for the portion of the intracoastal canal from the mouth of the Caloosahatchee up to the Anclote River which was prepared by a former colleague, I believe the Honorable J. Hardin Peterson. He regretted he was not able to be here today, sir.

We feel this project is a logical and needed extension of the local coastal canal. The local interests in that area have been taxes for 13 years. We are particularly happy that due to the great help of Senator Holland particularly, we received appropriations this year. We hope that the future appropriations will come as needed.

Thank you, sir.

(The statement follows:)

STATEMENT OF WEST COAST INLAND NAVIGATION DISTRICT BY J. HARDIN PETERSON, SR.

This statement is made on behalf of the West Coast Inland Navigation District. The district was organized under special act of the Florida Legislature, its primary purpose being to acquire right-of-way and spoil areas and to see that requirements for local cooperation are taken care of. It is supported entirely by tax funds. The address of the district is Courthouse, Bradenton, Fla. My address is J. Hardin Peterson, Sr., Post Office Box 111, Lakeland, Fla., and I am special counsel for the district.

The authorized intracoastal waterway project, 9 feet deep and 100 feet wide, extends along the lower gulf coast of Florida from the mouth of the Caloosahatchee River about 148 miles northward to the Anclote River. The route connects at its southerly end with the Okeechobee Waterway, which provides 8-foot depth across the Florida Peninsula to the Atlantic Intracoastal Waterway near Stuart. The gulf intracoastal route generally traverses lagoons, bays, and other

protected inside waters, except for a very short distance near Venice, Fla. Venice is about 56 miles north of the Caloosahatchee River.

The project was authorized some years ago, but due to right-of-way difficulties and changing conditions new studies were made. The last document on the subject matter is Document 109 of the 85th Congress, 1st session. This document has since been approved and adopted. The project has been authorized and in the last session of Congress construction funds for the beginning of the project were appropriated and have now been made available. The greater portion of the right-of-way has been acquired and every effort is being made to speed up the project.

Economically it is a good project. It provides an outlet northerly for traffic on the east coast waterway coming through the Okeechobee Waterway, and the Okeechobee Waterway connects the Gulf Coast Intracoastal Waterway with the Atlantic Intracoastal Waterway. In addition, this becomes part of the connecting link between the entire Intracoastal Waterway from Texas to Maine. It is of national importance and is also of considerable local importance. It will provide a safe area for navigation of small craft and eliminate much danger to small craft and relieve some of the problems of the Coast Guard. It will connect with and provide havens of refuge for small craft. It will provide an inland waterway for the large port of Tampa, where among the major shipments are oil, shells, and sulfur, which are the type of cargo which can be moved over inland waterways to great advantage. It will assist agricultural interests because it serves an area in which a large portion of the world's supply of phosphate is mined and the sulfur from Louisiana and Texas is needed in the processing of this phosphate. In addition to the many smaller harbors, it serves the large ports of Tampa and Boca Grande, both of which are ports for deep-draft cargo-carrying vessels and the Intracoastal Waterway can and will be used for assembling cargo for some of these vessels at these two great phosphate ports.

We understand that primarily the purpose of the committee hearing is to study water resources generally and how they are affected by the use of water, including navigation. In view of the large number of projects in the State and in view of the fact that no particular water problem has developed with reference to our project or has been indicated in any of the studies made by the Engineers, we are only making a short statement for the record so that others having more vital water projects will have more time. We appreciate very much the fact that the committee has come into our State and given an opportunity to persons interested in water resources to give at firsthand statements regarding their problems. We are interested in the overall problem of proper water uses and conservation, and there are many problems in our State as the committee can readily see from the various statements filed.

We have asked Senator Gibbons, who is making presentations, to file this statement in the record for us. We shall be glad to furnish to the committee or its staff any details which may be desired. We feel our project is of great importance, not only to our State but to the Nation, and now that appropriation for construction has been made we urge the Congress to continue the appropriations and we assure this committee and the Congress of our wholehearted cooperation.

Senator HOLLAND. I would like to say for the record I appreciate the fine statements about me. I want it very clear that the Senate is composed of 100 individuals and no one Senator can accomplish anything very much worthwhile either for himself or other parts of the Nation unless he has the support and cooperation of other Senators. It has pleased me very much to find the Senate as a whole so alert as to the need for developments of the type we are talking about. I want to pay tribute to the Senate as a whole and especially to those two Senators who are present here for being so alert to the needs not only of this part of the Nation but equally so to the other parts.

Senator YOUNG. I do not think that quite tells all the story. You can get certain items restored to the Senate side but when you meet in conference with the House they usually have five or seven of the toughest conferees they can pick up. There they simmer down to where one man representing the State of Florida has to carry the ball.

Mr. THOMAS. Mr. Chairman, we have other statements, some of which are here, and others we would like permission to insert in the record in the near future through Senator Holland, with your permission.

The CHAIRMAN. Fine.

Mr. THOMAS. Before I close, I would like to point out one thing that we have not heard this morning about water. We heard a lot about water. We all know this but we seldom think of it. Water is a mineral. I learned once from a eminent mining engineer that the economic development of a mine depends upon seeking out the most economic, the richest mineral that you could find to develop. Certainly that is true of the petroleum industry. Here in Florida we have the finest water resources in the entire United States and the greatest quantity and the cheapest of development and we strongly feel and urge the Congress to take an attitude that it should spend its money and develop its water resources where the money will be spent the most cheaply to gain the greatest good, not only for this area, but as has been pointed out, for the entire region of the United States east of the Rocky Mountains, making Florida truly the commercial crossroads of the Nation.

Thank you very much, Mr. Chairman.

The CHAIRMAN. Thank you, sir.

Senator HOLLAND. Thank you, Mr. Thomas.

I am advised that Dr. John M. DeGrove, who is an assistant professor of the University of Florida, has duties down at the university this afternoon and would like to be called at this time rather than to come later, if that is agreeable with the chairman.

The CHAIRMAN. Very agreeable.

Senator HOLLAND. I will call Dr. DeGrove at this time.

STATEMENT OF JOHN M. DeGROVE, ASSISTANT PROFESSOR, UNIVERSITY OF FLORIDA

Mr. DEGROVE. Thank you very much, Senator Holland, for your courtesy and I will be brief.

Mr. Chairman, and Senator Young, Congressman Bennett, it is nice to see you. I want to say just a few words and have a very brief statement for the record along the line that the committee has been pursuing just now.

This concerns the need to expand nationwide our effort in the field of developing water resources.

The growing complexity of the Nation's water problems has become increasingly clear in recent years. The vast increase in total water demand along with the multiplication of uses for which water must be made available has stemmed from the urban concentration of a booming population, a rapidly expanding industrial complex, and new techniques in agriculture such as supplementary irrigation more and more common in the East and particularly in Florida. All of these factors have contributed to a situation in which the demand for water threatens to outstrip or has outstripped the supply in some areas. Public concern with this question has brought about a series of studies during the last decade. While these research efforts have produced conclusions that differ somewhat in regard to policy and administra-

tive remedies of present program deficiencies, they are almost unanimous in their agreement that at first Government will have to assume more, not less, responsibility in the natural resources field if all the needs of competing water users are to be met in any reasonably adequate fashion.

Secondly, the size and complexity of the task will require effective participation by all three levels of government, Federal, State, and local.

Historically we all know that the Federal Government has assumed the greater responsibility for major natural resource programs in the United States. There is little reason to believe that this historical role can be reduced in the future. Indeed the evidence supports the conclusion that more, not less, will be required in the way of Federal responsibility for project planning and execution.

On the other hand, the size and complexity of the task to be performed also demands a far greater and more efficient effort by State and local interests in the future than they have produced in the past.

It is not the purpose of this paper to document State inadequacies as protectors and developers of natural resources. I would like to say we all in Florida are encouraged by the progress in recent years, particularly the very fine efforts by John Wakefield and the department of water resources to coordinate the efforts of our various State agencies in utilizing our natural resources.

I would like to cite a specific case in which confusion in Federal policy threatens to limit the effectiveness of a joint Federal-State-local effort.

The case I refer to is a project about which you have heard much already today and one which we are very proud of in Florida, the central and southern Florida flood control project. The joint effort to develop the full water potential of the lower Florida peninsula will be discussed in some detail by other witnesses at this hearing.

I would like to address myself briefly to something that Mr. Dail discussed, also, the question of sharing the cost of this vast multimillion dollar project between Federal interests on the one hand and State-local interests on the other.

Just not to belabor things that have already been said, the problem here essentially is that State and local interests in the original cost sharing recommendation were paying, by the testimony of the Corps of Engineers and the Hoover Commission mentioned here, more than the average sharing for similar projects across the Nation. Since that time Congress agreed to ask for an even higher cost participation by Florida interests. Florida interests now pay something between 35 and 40 percent of the overall cost of this very expensive project. Beyond that, and posing far more difficult problems in the future, since the State has been willing to go along with all cost sharing procedures so far is the question of recommending as new projects major modifications in the overall program.

Henry County has been mentioned where cost sharing arrangements formula higher than that applying to the rest of the project was approved. Another major modification in Dade County that could cost as much as $100 million is in the planning stages.

If present trends are continued this could result in a very large financial demand on Florida interest.

Now, the question at isssue is not whether Florida interests are being asked to pay more than their share under some ideal cost sharing arrangement. The question is whether or not the State is being singled out somewhat as a guinea pig and asked to pay significantly more than is being required in comparable projects elsewhere. If this is the case, and there is evidence to support this notion, then further financial demands on State and local interests in the form of treating modifications as a new project with higher cost sharing formulas might result in a refusal or an inability on the part of the State to assume the added cost burden and the State record so far in this fashion is certainly to be commended. They have gone above and beyond the minimum requirements, at one time advanced as much as $3 million to the Federal Government to help speed up the project.

Now, this cost sharing question is complicated by the fact that State-local interests in their complex project must spend large sums after the Federal-State relationship of the project is completed to make it maximum efficient. So constant demand of higher fiscal participation due to pressure from the Bureau of the Budget or Congressmen misinformed about the nature of the project or some other source seems to offer threat to the large multipurpose project which State interests have been willing to carry their share in and have set what seems to me an excellent pattern that might well be followed elsewhere in Federal-State-local cooperation.

I have no easy solution to the working out of standardization cost sharing formulas and Senator Kerr, I followed with much interest your efforts along this line and efforts of other members of this committee in hearings in the Congress in the last several years.

I would like to just point out that the present failure to have a standard practice here makes it hard for Florida to justify to its legislature continuing increases when similar increases are not being applied nationwide.

Secondly, I would like to say that there seems to me little opportunity, little chance that we will be able to move forward as rapidly as we need to in Florida in the development of our water resources unless the present austerity budget proposed and insisted on by the administration is in some way reversed, that there seems to me serious question as to whether the Bureau of the Budget properly recognizes the need for major efforts in the field of water resources given the constantly increasing demands all over the country and not just in Florida.

I hope that I have kept within things that are of interest to the committee, and thank you very much.

The CHAIRMAN. You kept within things that are of tremendous interest to this committee.

Senator HOLLAND. Thank you, Mr. DeGrove.

We will have this regular order now. The next witness is Dr. H. R. Wilber, Florida Wildlife Federation.

I might say to the committee that Senator Adams notified me he was simply helping Mr. Thomas in his presentation and did not wish to be called, is that correct?

The CHAIRMAN. Yes.

Senator HOLLAND. I understand that that is the situation.

Dr. H. R. Wilber.

STATEMENT OF H. R. WILBER, FLORIDA WILDLIFE FEDERATION

Mr. WILBER. I am Dr. H. R. Wilber, executive secretary of the Florida Wildlife Federation.

This is my 7th year as administration executive of the federation, and I am here to represent the masses of the people of Florida concerned with the recreational use of high quality water in the State of Florida. In representing the federation I have been a member of the Governor's water resources study committee concerned with recreational water use. My duty was to recommend desired inclusions in the water resources department policy when that department was founded in the State legislature some 2 years ago. I am chairman of the water quality committee of the State in conjunction with the department of water resources as a water resources program is developing. I was also chairman of the Governor's water access and water traffic safety committee and am proud to relate that Florida was the first State to create for itself a bill for regulation of boating practices in accordance with the Bonner bill passed by Congress at the previous session.

The reasons for my having been operative in the above capacities could be none other than a desire by the Governor to give the interested public a leading part in Florida's water resource program.

The facts concerning recreational water use and its value to the State, industrially speaking, has been startling to many. Boating interests produce an annual income of $300 million in the State of Florida. Fresh water fishing produces an income of $175 million a year and salt water fishing produces an income of $200 million a year in Florida. All three of these recreational water use facets are reportedly increasing at a rate of 10 percent per year so that at present we are in possession of a recreational water use program worth three-quarter-billion dollars annually. In another 2 or 3 years with present population growth tendencies, etc., it will approach the billion dollar a year mark. These figures are all the more startling when it is realized that the income from recreational water use exceeds the combined income of the citrus and beef industries within the State of Florida.

As representative of the desires of the masses of Florida interested in conservation and recreational water use, I have had splendid cooperation from Florida's Governor and his administrative groups over the last 4 years. I also wish it to be known that I have been the recipient of fine courtesy and cooperation from the Department of U.S. Engineers from the Jacksonville offices to Washington.

However, this same cooperation has not been carried through to the halls of the Florida State Legislature much to the chagrin of a great number of Florida voters. In my dealing with the legislature I have often felt like the drawf at the boarding house table and the substance I receive seems only food for thought.

In areas where State groups fail to function beneficially concerning the desires of the masses, I am acutely aware that our Federal Government becomes an instrument of accomplishment for the whole United States.

The Florida Wildlife Federation, through our parent organization, the National Wildlife Federation whose offices are in Washington, D.C., aided in the pressure for the National Coordination Act. We

were happy to see this act evolve from a congressional directive stating that agencies concerned with natural asset uses might use the advice of State and Federal agencies and advisers in feasibility and economic planning concerned with natural asset changes, to a congressional directive stating that such agencies must consider the advice of such agencies in reaching conclusions. We hope that the policy thus established will not be left to shift for itself but will be watched and nurtured by Congress to make certain that coordination is forthcoming and that the conservation desired by the masses is not neglected because of pressure from industrial leadership groups wearing Federal dollars for blinkers in their race for personal gain at public expense.

I am going to attempt to cite the truth and nothing but the truth concerning public desire in connection with several of the water resource problems of the State of Florida, but I shall leave the matter of the whole truth and statistics, values and finances involved to the State and Federal departments who are authorities on such matters. I have long since learned that prejudiced statements from people of my connections are frequently gathered together by great effort to be laid away lightly when compared to statements from State and Federal agencies considered to be vastly more authentic. Therefore, I am not going to present a large brochure garnered from files with information, opinions, prejudices, and requests, but will consider my whole presentation as brief enough not to be too time consuming, I hope.

Specifically, Florida has several problems immediately pertinent to consideration by this committee:

1. Florida has not been able to pass for itself an enabling act making it possible for Federal Government agencies to purchase property within the State of Florida. The last unsuccessful effort was in the recent legislature. The public feels adversely to the legislature according to my information and exercises hope that through congressional action it may become possible for the Department of Interior through the Fish and Wildlife Service to allocate funds to State departments for purchasing. Thus the program would be basically controlled by the State and still strengthen the policies of these Federal agencies. This would mean that the deeds would be held at State level rather than at Federal level as is now necessary.

2. Concerning a similar study to that above, Federal duck stamp moneys which the Congress recently allocated for acquisition of wetlands for duck resting and duck nesting areas cannot under the present conditions be expended in Florida because of the legislative fear of Federal domination. Therefore, some 140,000 sportsmen in Florida, paying duck stamp fees, are presently unable to benefit therefrom in any manner. Florida is one of the major resting and wintering areas in the world, and we need a means of acquiring these areas for all time with Federal assistance which is presently denied.

3. We request a review of the part played by the Coordination Act in planning for the south and central Florida flood control program. We especially desire a study of silting and red tides as these problems have increased steadily due to increased discharge from Lake Okeechobee. At present, accelerated flow from the Kissimmee River must be disposed of and it is planned to increase the height of the

Okeechobee dikes; thus deepening the lake to accept more rapid influx of water. We ask that the discharge from the lake be studied and that, if feasible, water be drained southwest across the Everglades where it is badly needed. This would help to reduce the discharge through present inadequate routes. We feel that deepening the lake is the question of a plan requiring study. Since evaporation is the main means of discharge from Okeechobee, we request a further study of the advisability of decreasing the surface areas of the lake by proposed diking off of the marshes on the northwest shore.

4. We have been informed that the greater part of the water from Okeechobee is removed by surface evaporation and we would like a review of the rationality of reducing the surface of the lake by dikes outside the marshes of the northwest shore. At the same time the depth of the storage basin is being increased because of a lack of safety valve controls present. We would like a review to inform the Senate of the United States whether all departments concerned with the Coordination Act have been properly considered. It is common knowledge that extensive studies have been made and extensive observations conducted by Federal as well as State departments. I have personally accompanied the Assistant Secretary of the Interior and Federal river basin study men in air observations as well as water trips in the areas in question. Their understanding is complete. These things may be slightly outside the committee's scope, but they will certainly interest your Commerce Committee members.

5. We should like Congress to consider the placement of sufficient tariff on importations of commercial seafoods to protect Florida's own commercial fishing industry. We believe funds from such tariff should be assigned to research in the salt-water areas of Florida to improve the crop of fish from these waters which has become vital to the food pattern of the whole United States.

6. We should like Congress to study the matter of Federal salt water fishing license. Desirable would be a pattern similar to the structure of the Bonner bill for boating, which stated that the program would be federally indoctrinated if not provided by the States involved within a stipulated time. We should like the moneys from such a program to be earmarked entirely for research that we might better understand what is necessary to continue to improve salt-water fishing conditions in the coastal areas of the United States.

7. We should like Congress to continue the support of our water pollution program as passed in the recent session. We would like to include studies of pollution practices by commercial carriers. These studies would cover the deposits of bilge oil and barge washings into the navigable waters of the United States. We would desire this study to be included in the chemical and pesticides program of the Department of Interior which is at present striving desperately to evaluate the effect on water supplies of our many new chemicals used today.

8. We should like Congress to stop drainage subsidies for the creation of new lands for farming and grazing at the same time that the Government is subsidizing a soil bank for laying aside of lands vastly more productive than those being created by new drainage operations.

The above is submitted as a program desired by the public of Florida and approved by the directors of the Florida Wildlife Federation.

The Florida Wildlife Federation is the organization leading the conservation program of Florida and interested in high quality water for a recreational water use program worth $3/4 million annually.

I repeat, I am Dr. H. R. Wilber, executive secretary of the Florida Wildlife Federation, office address, 112 West Indiana Avenue, De Land, Fla., and wish you to know that should you desire any greater or more definite information from this office that it will be immediately forthcoming upon your request.

I thank you for your patient attention and anticipate your kind consideration.

Senator HOLLAND. Thank you very much, Mr. Wilber.

Any questions?

Senator YOUNG. No.

Senator HOLLAND. The next witness is Commissioner Walter Weiss of the Dade County Board of Commissioners.

Mr. Weiss.

STATEMENT OF WALTER WEISS, DADE COUNTY BOARD OF COMMISSIONERS

Mr. WEISS. Thank you, Senator Holland, Senator Young, and Senator Kerr.

We, as representatives of one of the smaller units of government in Florida, would like to express our appreciation to this committee in two areas. One is the very worthy study that they have undertaken, its great significance is recognized by most of the people.

Secondly, that Florida should have been honored as the scene of one of your hearings. We think it is most appropriate and speaking from or as a representative of one of the smaller governmental units, I want to state that we are particularly concerned in our governmental problems in the county of Dade with this very matter and the results of the study that you are undertaking.

Senator HOLLAND. Just a moment. Your county has an estimated population of what at this time?

Mr. WEISS. It is approximately 1 million population; we had in 1955–56, and this I would like to state somewhat at randon, in 1955–56, when our population was in the approximate one-half million level we were threatened with a water shortage. The wells that supply the great city of Miami, the major metropolitan area of Dade County, were being threatened with salt intrusion. Today we are faced with a condition of flooding where great areas of Dade County are covered with water. We have a surplus. This is rather historical in our water problem here in the State of Florida and particularly on the lower east coast.

I would like to say from the standpoint of our governmental unit the Dade County Commission, that we concur in and endorse the written statements that have been submitted for the record by the Central and Southern Flood Control District through Mr. Ed Dail, the written statements that will be submitted by the Dade County Water Control Committee of the Chamber of Commerce, the Miami-Dade County Chamber of Commerce. We are in complete agreement

with them. We support them. We are working in this matter of teamwork that has been referred to.

I would like to refer to a number of the parts of the evidence that have been submitted here this morning. I would like to try and relate this for this committee if I might to the impact that this particular problem has on government at the local level.

As you are undoubtedly well aware, we in Dade County have been faced with an exploding population. This population growth has necessitated our taking an entirely new approach to the matter of local governmental administration. And in this effort on a county-wide basis to create a flexible, usable form of government we come to two great problems immediately.

Senator HOLLAND. You are speaking of the new metrogovernment that brings all cities and all areas of the county together under one executive group?

Mr. WEISS. That is correct, Senator Holland. It is a metropolitan form of government. Immediately we are encountering the very grave problem that is common to all areas of the United States but accentuated in the heavily populated areas. One of roads, and then the other equally important one of adequate water supply and adequate water control.

I would like to refer to this to try to put it in perspective, the matter of our water control.

Water is at one time our greatest treasure and also our greatest plague. There is a critical area between the matter of surplus and deficiency and I referred before to the great shortage that developed in the drought periods of 1955 and 1956. The matter of drainage and the matter of conservation are closely related when we encounter a condition that is as fundamental to our water supply as we find it.

We concur completely in the importance of this major effort toward water conservation. But we feel that there must be related to this the equal matter of water control and I would like to, if I might in this informal manner point to a parallel what we feel is a policy matter that affects the progress of such a program.

We are aware that in many portions of this country in the controlling of waters in our great rivers, taking the Mississippi or the Missouri as instances, that it has been found to be in the national interest for the Federal Government to create huge dikes controlling this water, containing it within the boundaries of the river to protect the vast areas of land and properties and improvements that lay on both sides of these rivers. This is sound and certainly is in the public interest.

Now, it cannot be said that the Federal Government in this instance has been reclaiming land for they have simply been protecting it. I said that our problem certainly in the south portion of Florida requires water control in the same nature, yet reversed. We need this retention of waters in order that through the dry periods we not be short of the great human needs for water, the great agricultural needs for water that we experienced and yet in these periods of high water that we have been experiencing this year and in these past several years you have heard evidence today that we have had an excess of 20 to 40 inches this year over an estimated average, over the yearly average in the State of Florida. We need a control of these

excesses, the channeling outward and this is what I refer to as the same phase and having the same relationship to water conservation and water control that we find in the controlling of water in our rivers.

I think there is another characteristic that we must view in this. In the south end of Florida and particularly in south Dade we have a great agricultural economy. This economy has suffered severely in the last 3 to 4 years on the basis of excess waters. Yet back in the 1955–56 area our groves that normally could pump up adequate water for irrigation at a 20-foot level, their wells were dry. They had inadequate water to irrigate the groves of the area. Our field crops suffered in comparison, so that we have in the overall a great need that these factors be considered and it is why we as an area of Florida have so wholeheartedly supported the Central and Southern Flood Control District partnership with the Federal Government in this conservation and drainage.

I would like to emphasize this point, if I might, that the carrying out of such a program to effectively contain waters in reservoir areas for the building up of pressures and resupplying, recharging this aquifer when needed, the proper drainage of the surpluses that we get from time to time as a natural sequence or consequence will perhaps reclaim lands. This is a reference that has been made that I cannot help but feel is slightly improper. For we are faced with this and this again goes to our local government and its problems. We have no control over the number of people who are coming to south Florida. The fact that there has been in the neighborhood of a half million additional people settle in Dade County within this last 4 to 5 years is something over which we have no control. Yet we are responsible for their well being, we are responsible to supply them with the increased water needs, their needs of sanitation. We have the responsibility of preventing them from being flooded out in their homes. These are very real local governmental problems that relate to this national responsibility that has already been accepted.

I would like to urge that the recommendations that there be a greater flexibility, if possible, toward the financial expediting of these very important programs be worked out. I would like to recommend, also, that there be further consideration to the matter of a greater facility of modification of programing that has been agreed upon and approved for in this area we are experiencing some difficulties. They are problems. They are real problems for it is not possible at the local level to completely foresee the full direction of growth of an area such as ours. We are in the midst of a planning program, planning our land use, our water use, our industry location, the location for the homes of people, our agriculture, these are all a part of our studies that are presently being made and we are tremendously handicapped in the intelligent carrying out of this program because we don't know what lands will be under control of a controlled watershed program at the present rate of its progress. It is a real problem.

I would like to conclude with this, for these are informal remarks. I prepared no statement for the record, no written statement. I simply wanted in this informal manner to offer these thoughts to this committee to indicate the effect that local governmental units are experiencing in the impact of growth and the necessity for the expe-

diting of this very worthy matter of water control and conservation that your committee is so ably conducting.

If there are any questions, I would be happy to answer them if I can.

Senator HOLLAND. You have indicated that you have been adversely affected by the fact that there has not been sufficient flexibility and readjusting the program of the central and south Florida structures to the new population pressures, new land-use requirements of your county.

Mr. WEISS. Yes, sir, Senator Holland. That is correct. We feel, and if this affects us, certainly in other areas of the United States this policy and flexibility must also have its effect. I cannot speak for other areas of the country, obviously, for I am not familiar with their problems and programs. But it is a policy factor and that is why I emphasized it for this committee. I know it is important in your considerations.

Senator HOLLAND. Is it not also the case that you have been hurt at least temporarily by the lack of speed in completing the program which has resulted in waters being disproportionately directed toward your areas which are lower than some that are higher up the State so that instead of those waters being contained in storage areas they have really spread but over agricultural and other lands in your county to a much greater degree than would have been the case if the structures had not been more complete farther north in the district? Is not that correct?

Mr. WEISS. That is absolutely true, Senator Holland. We have been materially injured and in the agricultural sense it has been disastrous. There are surpluses of water that we have been subjected to as a result of the lack of completion of this reservation area. The storage capacity of this overall program that has been planned. There is a great urgency that we consider it to be worthy of crash programing if you will, for again our agricultural economy in Dade County is our third most important economy. We are accustomed to the recreational factors, the great values that accrue there for we are a vacation land. Our major industry is tourism but agriculture stands very high and it has been disastrously damaged to the extent that as a major result of high waters what has probably been one of the largest tomato-growing farm organizations in the world has gone into bankruptcy. This in great part has been occasioned by the complete inability of agriculture to cope with excess of water to the degree that we have suffered. This is true, Senator Holland. I appreciate your comment there.

Senator HOLLAND. I wanted that to appear in the record because not only I but the Senate committees have wanted to move much faster in the completion of these structures than has been the case up to now.

But I also feel that in fairness it should be shown that the construction projects were timed to take care of the gravest needs that had appeared in the flood of 1947 and similar floods and particularly in those areas where great loss of life had been occasioned in early year experiences.

You cannot complete everything at the same time. In the meantime, of course, while that work was being done up around the lake and also to protect your bay areas that existed in 1947 and that were

badly hurt then, such as the western part of Fort Lauderdale, such as Davie, such as Hialeah, your area had grown so greatly that not only from the standpoint of its impact upon agriculture but from the standpoint of impact upon newly created residential areas this influx of excess water did vastly greater damage than could have been anticipated at the stage of development which existed in 1947, as you of course realize better than anyone else.

Mr. WEISS. That is very true, Senator Holland.

Senator HOLLAND. I want you to know that your congressional delegation is completely a unit in a desire to speed up the matter and that we are hastening the engineers, and the engineers on their own volition are working as fast as they can to complete the readjusted planning which is necessary in a great part, at least, because of the great growth of your area.

Mr. WEISS. I think that is true.

Senator HOLLAND. We fully understand that you people have been patient a long time—sometimes not so patient as long suffering, let us put it that way. We are trying to complete the program as rapidly as possible. That you may be sure of.

Mr. WEISS. We appreciate that, Senator Holland, and I would like to say that we are very proud and happy with the complete accord we have found in our Congress. This has been a most encouraging aspect of the whole thing. We recognize the very real problems that exist; money problems exist everywhere. We are experiencing them and I am equally certain that our Federal Government has the same problems only in larger quantities and greater amounts.

Senator HOLLAND. Your area, which has contributed a very large part of the locally raised funds—because millage laid on your area naturally would make greater contribution than the rest of the district—has been most patient and we are conversant with the problems that you are having and we appreciate your patience and we are trying to hurry it up in every way that we can.

Mr. WEISS. We are certain that that is so, Senator Holland, but we did want to emphasize, as I said, several points, one of which is the matter of a greater flexibility in the modification of programing. That is where a change in plans is indicated, it can be expedited promptly, so that we can move forward. However, we do recognize that we must of necessity get our benefits last, for the major works had to be created north of us and we do know we put in a great proportion of the substance that built these. We are not quarreling. We are in complete accord. It is just these are very real problems and they have a very real effect on local government and it makes it an almost unbearable situation for we have not the means to cope with both problems. It goes beyond our capacities.

Senator HOLLAND. You know, of course, that we did move rather expeditiously the structure that would have been along the Coral Gables Canal southwesterly to another location.

Mr. WEISS. Cutler.

Senator HOLLAND. What was that?

Mr. WEISS. The Cutler drainage area; yes, sir.

Senator HOLLAND. You know we are now trying to accomplish a similar moving of the location of the levee which I will term as the

outside southeast levee to a point farther inland because of your need for more residential areas in that particular location.

Mr. WEISS Yes, sir. This is one of the economic pressures and one of the development pressures where private industry said, "We are planning on moving ahead. People want this area to live in and we are going to prepare it suitable for them." It brings then the additional pressures upon government to accommodate this rapid growth and it is something that we cannot control. We cannot say who shall come; how many or when. We simply must accommodate their arrival.

Senator HOLLAND. It is not only necessary that the project be accommodated to your growth, but if the State is going to be able to buy the areas affected, which it is required to do, it is as necessary to confine those areas to those that are not worthy for residential and industrial development because the State cannot undertake indefinite expenditures——

Mr. WEISS. That is true, sir.

Senator HOLLAND—simply to buy lands that are going to be covered by water. So from both points of view, National and State, as well as your local one the readjustment of the program is necessary and we are trying to accomplish it as rapidly as we can.

Senator Young has been down and looked over the program more than once. One time I was with him. I am sure he has questions on the central and south Florida picture as it applies to Dade County.

Senator YOUNG. I am very pleased to note the progress you have been making. I was very interested in that one statement you made evidencing your concern over the blanket condemnations that are made sometimes against programs that would protect land from flooding or in other instances might drain it. I can understand the feeling of some of these people when some land is being drained that should not be drained and some land is being protected from flooding that should not be. I, too, believe it is wrong to make a blanket condemnation of all such programs because you certainly in Dade County have certain areas that must be protected if you are going to take care of the additional people coming into your county.

Mr. WEISS. Yes, sir. This is a part of my point. In an informal manner of expression in this way I may have given the wrong impression or placed the matter on the wrong side of the coin or picture. What I am actually trying to drive at is that if as a result of accomplishing the major objective of water conservation and water control, which involves drainage, a function that the Federal Government has accepted partnership in, if in accomplishing these objectives certain lands as a byproduct become usable that were not previously usable, I do not think that this in itself should deter the program nor interfere with its overall completion. I think that this is an area that we are perhaps hurt in some instances.

This has been referred to in our farmlands, that what we are trying to do is reclaim farmlands. We are not trying to reclaim farmlands. We are trying to use farmlands that have historically been used but due to the uncontrolled water economically are suffering badly. This is the major problem and I hope that clarifies a little bit the point I was trying to make.

Senator YOUNG. This is a problem that the Congress has to wrestle with more and more each year. Some of these farmlands are being flooded sometimes 2 or 3 years in a row, farms that had been farmed many years. It not only adds to the cost of farm operation but it adds to the cost of the food the consumers use. There are certain lands that have to be protected.

Mr. WEISS. True, sir. And in that very vein these lands that we are speaking of in South Dade produce our vegetable crops at a time of the year when nowhere else in the United States are we producing or harvesting crops. I say nowhere else. Nowhere in comparable quantities. We have that unique situation that it supplies to the people of the United States fresh vegetables at a time when they are not available from other sources. I think this is important.

Senator YOUNG. In my own State some land is being drained that should not be drained. I have read the figures from some organization listing, for example, land in the Red River Valley next to Fargo, N. Dak., some of the richest land in the world. They list that as land that should not be drained. That land has been farmed since the State has been settled. It is the best land that we have. You certainly cannot stop those farmers from draining that kind of land. It is all wrong.

Mr. WEISS. Thank you very much.

Senator HOLLAND. Thank you very much.

Mr. WEISS. I appreciate this opportunity to make those informal statements.

Senator HOLLAND. Thank you, sir.

Mr. Richard A. Zaun, chairman of the South Dade Water Control Committee.

Is Mr. Zaun here?

Mr. ZAUN. Yes, sir.

STATEMENT OF RICHARD A. ZAUN, CHAIRMAN, SOUTH DADE WATER CONTROL COMMITTEE

Mr. ZAUN. Commissioner Weiss pretty well represented our problems in our area down there.

I might say that I am one of a group of individuals in that particular area who in theory are waist deep in water this year and have had these problems down there. And with all these problems over the last several years of flooding we have taken it upon ourselves to find out the cause and what could be done to rectify the situation if it was possible.

Then we started running into a lot of obstacles. As was outlined in this meeting here, because of the coarse nature of the Biscayne aquifer you cannot go in and take a small piece of land, ditch it, dig it, and pump it. It is an overall thing in the whole south of the southeast section of Florida. It has to be an overall plan. So, therefore, anybody that is familiar with the central and southern flood control program wholeheartedly endorses the project, although the way that this work has progressed we may be in disagreement because at this time——

The CHAIRMAN. May what?

Mr. ZAUN. We disagree with the way the work has progressed up to this point, because we are at the receiving end of the waters going

into the conservation areas. Such as now we have one of the largest pumps in the world, S–5 in Palm Beach County Conservation Area No. 1 pumping water into 1 and 2 and finally down into 3 which has no controls at the bottom. As an illustration here, we decided if we could possibly dig some culverts this summer on the Tamiami Trail for 8 miles to divert the water more over to the Everglades National Park we would get some relief. The water finally got so high it went over the Tamiami Trail. In the process we calculated approximately how much water was going through 14 sluices which are made up of 17 16-inch culverts; 7, 54-; 3, 42-; and 15, 48-; and 3, 66-inch culverts. It was more than 4 billion gallons of water every 24 hours.

Now, this is less than half of this stretch of road that traverses the Everglades at this point—in other words, from the west side of L–30 and L–31 to Forty-Mile Bend where you go into Collier County, which is not part of the Everglades.

As it has also been outlined here, in the year 2000 the State of Florida for domestic use would be using 5 billion gallons of water daily. We are dumping almost that amount of water right now in 8 miles of road through the Everglades itself just to be flowing out into the bay or Gulf of Mexico. That would be fine but a good proportion of that water is running over our agricultural lands. Senator Kerr, I brought you a piece of our porous aquifer of the Biscayne aquifer which I would like to present to you this afternoon.

This water does not have to run over the ground but it has free movement through the rock which charges our water table at an all-time high whenever the water is high and in the Everglades itself. So anytime we have a slight rain, which we had more than just a few slight rains this summer, it brought about these flooded conditions which have drowned the plantings this last summer and fall where the farmers have had to plant three or four times. They replanted their crops. A vast portion of this land will not be farmed this year. There are lands up until 2 years ago which were down in the highlands sections of Florida City. It is my understanding that farms that had been productive for 25 years have not been farmed in the last 3 years. So here is a Government-sponsored project in a sense, or endorsed, that is helping one group of individuals but at the same time is directly hurting another group of people.

I have gone into this program and have seen how wonderful it can be when completed; whereas in the city of Coral Gables salt intrusion in our wells has hurt the ornamentals to help make the city beautiful. People on the Coral Gable Canal had to give up using the wells there and go to municipal water service, which is expensive. One man had a bill there to the extent of $90 just to water the lawn during the dry year. In Florida when people come down to the Sunshine State people say, "Orange and grapefruit trees, you should have one in your back yard." Actually, they call them pieces of gold nuggets when you show them to friends. People using water that has been contaminated with salt water no longer can grow trees in their yard. I have seen them die. I am a nurseryman by trade. On the side I do custom planting. I see this and I know the ultimate completion of this thing is the most wonderful thing that has happened to Dade County. They will have absolute control over this water. We have

got it, billions of gallons of it, if we can just put it in the right place and keep it for the year around.

Take the Everglades National Park. The wildlife out there at this time of the year is going helter-skelter in every direction. You cannot pin it down any more. The birds have disappeared from the Tamiami Trail in that section because the water is so high they cannot feed. They come from the urban areas to the farmlands that are submerged where they walk around and gather minnows and feed on mosquitoes and the like. You take the deer that were normally hunted at this time of the year, they have had to put off the hunting season in Dade County because the deer are so poor and it would be unsportsmanlike to hunt them on the little bit of high ground left in the Everglades district for them to get refuge.

Senator HOLLAND. You have been feeding them, too, have you not?

Mr. ZAUN. That is right sir. There again we have gone to our county officials as groups now looking for some means. These things we have done on the Tamiami Trail we have done with our own money in some cases. We try to do other things on our own, not asking for aid. There are things too big for us to do and the local government to do. We went to local officials. There was nothing they could do because without primary controls, canals and pumping stations being completed and being able to retain this water, they were helpless.

After finding out what this whole thing is we have to come to Uncle Sam and say, "Buddy, we are in trouble and we need help." Somebody said, "Water," and I am here.

Senator HOLLAND. Let me ask you two questions.

Your first desire is to have the structures, pumping stations, and so forth in the completed program rushed to completion as quickly as possible; is that not correct?

Mr. ZAUN. Yes, sir. There have been millions of dollars lost already this year.

Senator HOLLAND. And your second desire is to have certain changes in locations that have proven to be more economical and more in line with your stage of development in Dade County than appeared could be the case in 1947 when these agricultural lands were laid out?

Mr. ZAUN. On agricultural lands at this time there is a levee, an L–31, which runs south in Dade County. It is not effective at this time for the simple reason there are no pumps to push the water back to the west and canals to carry seepage back to the bay. There is farmland to the west of this levee which is supposed to be part of an area, and from what I gather, if you are going to hold water back from coming in our urban area you are going to hold water back on agricultural land. It is not very understandable to me why this was done in the first place. So I believe Mr. Weiss has outlined that they would like to have a little flexibility; that it would be desirable to move projects such as the L–31 for the purpose of that farther west.

Senator HOLLAND. You need to relocate some farther west, some in different places because experience has shown that the original locations are not the most effective ones?

Mr. ZAUN. That is true.

Senator HOLLAND. And not ones that lend themselves to the present state of development such as was thought would be the case when

the original structures were planned to go at the places they were to go?

Mr. ZAUN. Senator Holland, let us look at it in this light. If you are going to have a conservation area and flood control program and you would not give this land to the Everglades National Park or they don't have it if land is going to be flooded, it is no good to anyone. It is either give it back to the park and do away with agriculture on that land or go to work and protect it.

On that point—I am not an engineer—but it would seem to me that for the whole of the community and even the welfare of the United States in the point that if we don't grow the tomatoes in Dade County we sure will get them from Cuba, Mexico, or some other country and they would cost the housewives all over the United States more money just due to possibly the transportation alone to get them to the housewife.

Senator HOLLAND. You mean in December and January?

Mr. ZAUN. That is correct, sir. Also being these works are behind and urban development has pushed ahead—you take one project out there called Westwood Lake, McCrow Bros. built it. It covers a full square mile. Most of the homeowners are veterans. They served their country. They come from all over the United States. Because of the incompleteness of this program, which we as local people down there have nothing we can do about financially—I believe we put $12 million into this thing and received far less than that out of that to date. In fact, I think it is about par but a lot of this work has been done on a free gratis basis because of the digging for the fill. But this contractor, in order to develop the land, because the higher ridgeland has become scarce, has had to fill this land to bring it up to flood criteria, in other words, to a point where the land would not flood. It cost an additional million dollars an acre. That builder did not absorb that cost. Those individual homeowners paid for that.

Senator HOLLAND. You mean a million dollars a section?

Mr. ZAUN. Pardon?

Senator HOLLAND. A million dollars a section?

Mr. ZAUN. Yes. That is being conservative. That million dollars for the section is only 1 foot of fill. They are using this land but in theory the people are footing the bill for this thing. And again, even like you might say going back further, the Indians that live along the Tamiami Trail figure even the water this year was just a momentary thing. They packed up and left. The water did not go down. They moved back to the cheekees and built ramps on blocks so they could get from one cheekee to another. They decided to live with the water.

Senator HOLLAND. You cannot move the nursery with the facility that the Seminoles moved their cheekee?

Mr. ZAUN. No, sir. Even the Airboat Association at Greatport out there has not been active this year because the particular location on the Tamiami Trail there went under water. They could not get to the boats. And they got water over the top of that fill. That spot became a difficult issue down there on the water thing. At least we can smile and laugh over this thing down there.

Senator HOLLAND. You are mighty good sports about it. Just do not think we do not know your problem, because we have been there and

have seen it and are trying to help. We cannot do a thing of that magnitude all at one time. It is a tremendous thing, as you know.

Mr. ZAUN. The one thing we would like to see is this. Because of the uncertainty of the thing, the uncertainty of money coming from Congress and even from our own State, you do not know how soon these projects are going to be completed. On top of that you do not know which projects will be implemented. You do not know right up until the last minute. We did not know C–1 was coming up to U.S. 1. It seemed like it dropped out of nowhere. You cannot go ahead and plan development of your community unless you know what is going to take place and we as people want to use this land. We are using the land. We are not waiting for somebody to come down and drain a piece of property so we can go in there and develop the thing. We are trying to use this land now to the best of our ability.

I sound like I hate water but I know we have to have water at all times in order to keep the salt out.

I thank you, sir, for being attentive.

The CHAIRMAN. I want to thank you for a very fine statement and the evidence of a very fine cooperative spirit and one which in my judgment would be provocative to the Government to move with all speed possible.

Mr. ZAUN. Thank you, sir.

Senator HOLLAND. Mr. Turner Wallis, of the water resources control committee and the Miami-Dade County Chamber of Commerce.

STATEMENT OF W. TURNER WALLIS, WATER RESOURCES CONTROL COMMITTEE, MIAMI-DADE COUNTY CHAMBER OF COMMERCE

Mr. WALLIS. My name is W. Turner Wallis.

I would like to explain the title of the report that has been handed you. It says "on behalf of the water resources committee, Florida State Chamber of Commerce and the water resources committee, Miami-Dade County Chamber of Commerce."

There has been no official action by either of those groups. Time has not permitted members of each of those committees who have reviewed this—are in accord with it. I would like to have the opportunity to supply for the record at a later date that this has been the subject of an appropriate official action by those groups. It does reflect the views of the Metropolitan Dade County Commission and its water resources engineering staff.

The CHAIRMAN. Thank you very much, Mr. Wallis.

That certificate will be put into the record when supplied.

Mr. WALLIS. Thank you. The first portion of this statement has been very ably and adequately covered by testimony of other witnesses.

Unlike those of much of the United States, Florida's basic water problems deal, not so much with the supply and availability of water, but with water control and use. Each year an average of 53 inches of rain falls on the State—many times more than is used or needed.

Florida's landscape from one extremity to the other is marked by a wide variety of hydrologic features, greatly influencing human activity in every part of the State.

Heavy, largely seasonal rainfall, combined with low surface elevations, high water tables and practically level topography, has created conditions in this State which are highly conducive to water problems.

Land reclamation through drainage and flood protection for developed areas are undoubtedly the two most consequential and universal water problems in Florida, with pollution, salt water contamination, siltation, protection of fish and wildlife habitats, development of navigational and recreational facilities, and a host of other problems occupying a position of considerable importance also.

Although these natural conditions have existed with little variation since the beginning of Florida's recorded history, it was only with settlement and increasing population that serious water problems resulted. As the State's population has expanded, problems of water control and use have multiplied in accelerating proportion. In this sense, the astounding rate at which Florida's population is currently growing is the real basis of the problems the State experiences in developing and controlling its water resources.

POPULATION GROWTH IN FLORIDA

Florida's population growth has always been steady, through not unnatural for a frontier State. Since World War II, however, at a time when the rate of growth should have been tapering off, inmigration has been so great that Florida has become the second fastest growing State in the Nation. Only Nevada, with one-seventeenth Florida's population, is increasing at a faster rate. In 1940, Florida ranked 27th in population, with a total of 1,897,414. By 1950 it had advanced to 20th, with a population of 2,771,300; and in 1959 its estimated population of 4,600,300 now ranks it 12th in the Nation. If it continues to grow at its current average annual rate of 6 percent—three times as great as the national average—Florida will be the ninth most populous State by 1965, with over 6 million inhabitants. Of this average annual increase of almost a quarter of a million people, more than two-thirds are coming from outside the State.

THE EFFECT OF POPULATION GROWTH ON FLORIDA'S WATER PROBLEMS

With such rapid population increases, the quantitative aspect of Florida's water problems is particularly significant. More people inevitably results in more intensive development and higher land utilization, and greatly magnifies the basic needs of water supply, flood protection, and aquatic recreation. To further aggravate the situation, constantly changing proportions make it extremely difficult to bring the exact dimensions of these problems into clear focus at any particular time. While the general scope of this statement does not permit a detailed discussion of individual water problems the highlights of each can be briefly summarized.

RECLAMATION

In much the same manner that the arid parts of the Western United States vitally needs reclamation through irrigation and water supply, Florida and other parts of the Southeastern United States urgently require reclamation through drainage and water control. Florida's expanding population and the related development activities must have usable land area, free from inundation. This is becoming an increasingly difficult requirement to fill, as much of the Florida Peninsula—especially in the attractive southern extremity—is naturally covered by water or susceptible to prolonged periods of flooding. Emphasizing the reclamation needs in Florida is the fact that of the 35 million acres of land area in the State, over 20 million acres have been patented to the State by the United States as submarginal lands subject to the Swamp and Overflowed Lands Act of 1850. Comparison of this figure with the 65 million acre total for all of the Southeastern States further illustrates Florida's submarginal situation. This State must have extensive coordinated reclamation efforts if it is to accommodate the enormous land requirements for anticipated population growth and industrial and agricultural expansion.

FLOOD CONTROL

Florida will always be subject to flooding of some degree. Torrential rainfall in the typically tropical pattern combined with periodic hurricanes inevitably results in a local accumulation of surface water, causing property damage and threatening human life. Some flooding also is a product of increased runoff from upstream watersheds as land development takes place in those areas. There are thousands of people and countless acres of developed land already jeopardized by recurrent flooding, with the situation becoming more critical each day. Florida desperately needs some provision for holding flood damages to an absolute minimum.

SALT WATER CONTAMINATION

Surrounded on three sides by the sea, Florida is faced with the continuous problem of salt water contamination of its ground water supplies. The bulk of the State's population increase and much of its industrial development has taken place in the low-lying coastal areas. Excessive drainage and withdrawals from the aquifers—especially in times of drought—results in lowered water tables, susceptible to infiltration by sea water. Either this problem must be effectively reduced, or new sources of fresh water supply must be sought.

WATER POLLUTION

While tremendous progress already has been made in controlling water pollution in Florida, rapidly increasing population and industrial development makes such problems a constant threat. Intensively used interstate streams are a frequent source of pollution trouble, as are local streams and ponds utilized by certain industries. Other pollution problems arise through the prevalent use of septic tanks for

sewage disposal in many areas of the State. Better surface water control and sewage treatment, and stricter regulatory laws will largely eliminate this problem.

NAVIGATION AND RECREATION

Population and industrial growth creates expanding needs for waterway development, for both commercial and recreational use. Florida is particularly suited naturally for this type of water use, and greater emphasis must be given to this aspect of water resource development in all future projects. Aquatic recreation must be recognized as a growing need and a legitimate purpose of public water control programs.

WILDLIFE HABITAT PROTECTION

In planning future water resource development for this State, it cannot be overlooked that fish and wildlife are inestimably important to Florida's tourist economy as well as to the local public. Appropriate consideration must be given to the enormous requirements for aquatic wildlife habitats. Recognizing these requirements with other pressing needs of an expanding population is becoming increasingly difficult. Of particular inmportance, however, is the absolute necessity of controlling the popular dredging and filling activities in Florida's waters.

COASTAL PROTECTION AND DEVELOPMENT

Closely related to water problems, and intensified too by rampant population growth and concomitant development activity, is the need for preserving Florida's shores and beaches. Natural problems of ownership, control, development, and use threaten to deprive the public of that valuable asset existing in Florida's 1,200 mile coastline and the shores of its 30,000 fresh water lakes.

THE NATIONAL INTEREST AND FEDERAL RESPONSIBILITY IN FLORIDA'S WATER PROBLEMS

While Florida has many water problems widely varying in aspect and applicability, the crucial matter to be resolved in each case consists not so much of technical engineering or hydrologic questions, but of administrative and financial procedures. The State of Florida has been instrumental in providing for these needs in several important respects. For over half a century Florida has had legislation to authorize and encourage various water resource development activities at the local level. Most of these laws prescribed administrative and fiscal arrangements, and some provided for loans from the State internal improvement fund. In its Flood Control Act of 1949, Florida went a step further by creating a flood control account, supported with a biennial appropriation to be used expressly for State participation in local water control projects. Despite the explicit reference to flood control, a local project for any of a number of purposes can qualify for this aid, providing that it is for participation in an authorized Federal project for the area.

Although these efforts have significantly advanced water resource programs in Florida, the basic problems have now become so greatly magnified that they are beyond all reasonable capabilities of either local or State government. The tremendous population influx from outside the State has greatly intensified existing Federal responsibilities and has created new problems with national ramifications. In the interest of the public welfare, Florida needs a large measure of Federal assistance in providing flood protection to its citizens and developed areas, in developing its ports and waterways, in minimizing pollution and salt water intrusion, and in preserving wildlife, shores and beaches, and other natural assets. Most of all, perhaps, Florida needs the aid of the Federal Government in making its vast areas of submarginal lands fit for human habitation and use. In this way, the basis for many of the water problems consequential to human settlement could be elimination or effectively reduced at the outset.

Through the well-conceived program of the U.S. Bureau of Reclamation, ably supported by local interests through the National Reclamation Association, many unusable areas of the West have been converted into highly productive lands, easily capable of sustaining the population increases of the region. This is a commendable program from which the entire Nation has measurably profited. In the humid Southeastern United States, however, the objectives of the Bureau of Reclamation program are almost totally unknown. As a counterpart, there exists only the permissive authority of the U.S. Army Corps of Engineers to improve major drainage features. The corps' program is further reduced in effectiveness by legislative and administrative restrictions to an extent to which the Bureau of Reclamation has not been subjected.

Congress must recognize the acute reclamation needs of the Southeast, and take appropriate steps to discharge the growing Federal responsibility in this area in a manner comparable to that which has achieved such notable success in the West.

CONCLUSION

Florida's water problems today have become greatly intensified as a result of rapid and unprepared-for population increases, primarily from immigration. Despite maximum efforts by local and State governments to alleviate problems, the anticipated continued population growth and related development can result only in further aggravation. Florida, as other States similarly subjected to such abnormal growth, urgently needs Federal participation in its efforts to meet the increasing demands. Timely cognizance of this situation by the Senate Select Committee on National Water Resources can be of exceptional value in apprising Congress of the problems and responsibilities it must provide for in framing a suitable national water policy and program for the future.

Thank you very much.

The CHAIRMAN. Thank you, Mr. Wallis.

Senator HOLLAND. Thank you, Turner.

Mr. Bolivar F. Hyde, Jr.

Mr. HYDE. Senator and Mr. Chairman, I am going to ask Mr. Lamar Johnson, our facilities engineer, to make that statement.

Senator HOLLAND. Mr. Lamar Johnson.

STATEMENT OF LAMAR JOHNSON, FACILITIES ENGINEER, SOUTHWEST FLORIDA WATER CONSERVATION DISTRICT

Mr. JOHNSON. Mr. Chairman and gentlemen, I am Lamar Johnson, consulting engineer for the Peace River Valley Water Conservation and Drainage District. This is a drainage district that includes three entire counties in southwest Florida and most of Senator Holland's county of Polk. The district office is in Bartow, which is Senator Holland's hometown.

It has been estimated that the average unconsumed runoff to tidewater is about 1,152 billion gallons per day in the continental United States. The current use of water for all purposes in the United States is 270 billion gallons a day. The per capita consumption for all purposes is increasing at a rate of 1 percent per year. The population of the United States is increasing at or about a rate of 2 percent a year.

Projecting these values into the future it would appear that in 70 years, and possibly as few as 55 years, that we would be using the entire amount of fresh water now being discharged to tidewater.

The CHAIRMAN. What, about, did you say that was?

Mr. JOHNSON. 1,152 billion gallons per day. That is the figure that I have. I didn't compute them. I took them out of a book.

The CHAIRMAN. Actually, what you said was 1,152 billion.

Mr. JOHNSON. Yes, sir; I can't count that high. I am sorry.

The CHAIRMAN. I cannot either, but I can pronounce it. And your estimate of the present requirement was 270?

Mr. JOHNSON. 270 billion.

The CHAIRMAN. 270 billion.

Mr. JOHNSON. That is for all purposes including irrigation which is the large use, of course.

The CHAIRMAN. Of course, industry is the greatest use.

Mr. JOHNSON. Of course, it is.

The CHAIRMAN. Yes. Your estimate is that by 2015 to 2025 the needs will approximate the present available supply?

Mr. JOHNSON. That is right, sir.

The CHAIRMAN. In toto?

Mr. JOHNSON. They will be using, although possibly we will be using and reusing and reusing.

The CHAIRMAN. I understand.

Mr. JOHNSON. Yes, sir.

The CHAIRMAN. But the amount in use will approximate the present known supply?

Mr. JOHNSON. The National Government has heretofore placed emphasis on flood control, navigation, irrigation, reclamation, and power.

The increasing use of water would seem to indicate that planning for long-range conservation of all water resources is a proper field for the National Government to be in.

The Peace River Valley District is very much interested in water conservation because we realize its importance to development of Florida industry and agriculture. The Peace River has the highest flood runoff per square mile of any major stream in the peninsula of Florida.

We believe that the ultimate development of the economy of the Peace River Valley depends on the control and conservation of its water resources.

The greatest need for any area in this country in the development and conservation of its water resources is a definite policy established by the Federal Government saying exactly what fields of water resource development they are interested in.

The CHAIRMAN. May I interrupt you there to say this? You have touched on a subject which other witnesses here and in every other place we have held these hearings have discussed—and, by the way, I believe this is the 20th such hearing we have held—which points up a very widespread desire on the part of people who work in the water conservation field that the Federal Government declare a definite policy with reference to the part to be played by it and the State and local governments in the matter of conservation and control of water resources.

That is a very desirable objective. In your opinion, if there had been such demand 50 years ago and it had been acceded to by the Federal Government, would the controlling considerations which might have been written then have been such that a policy written then would as of this date been found to be wholly unworkable, inadequate, and inappropriate?

Mr. JOHNSON. Of course not, sir. The basic documents of this country, the only ones that have seemed to have withstood tests of a long period of time, without too much revision, I think that today that on the basis of what we know and what we understand we do the best if we can set up a policy that will protect the resources for the future.

We cannot, I do not believe, be right in every instance. There will probably be 50 years from now when we develop new uses for water, maybe develop new ways of repeating the use of water, the reuse of water. I think we will have to change the policy and adjust but the thing to do now is to try to anticipate as far as possible the needs for the use of water and what we can do.

The CHAIRMAN. I agree with that.

Mr. JOHNSON. Yes, sir; and what we can do about meeting those needs.

The CHAIRMAN. And where they can be met.

Mr. JOHNSON. Yes, sir.

The CHAIRMAN. And how best met.

Mr. JOHNSON. Yes, sir.

The CHAIRMAN. Do you not think we have to approach this matter of the determining of policies with the full realization that the number one necessity is to have a policy that will best fit the conditions of today and with that degree of elasticity and power to change that will be needed to enable us 10 years from now, or those that are here 10 years from now, to be able to act in such a way as to meet the needs then existing and foreseeable.

Mr. JOHNSON. All we can do today, Senator, is to do the best we can. We may not hit the mark 100 percent but certainly we will be nearer the target with any kind of a policy and plan that is aimed in the right direction than we are today where we are operating primarily without a definite policy.

The CHAIRMAN. Now the Supreme Court made a number of decisions, you know.

Mr. JOHNSON. Sir, I did not understand.

The CHAIRMAN. I say we are not entirely without landmarks. You knew the Supreme Court has been in session off and on for the last 5 years.

Mr. JOHNSON. Senator, without any disrespect to anyone that is one of the things I think that we need to avoid, the Supreme Court making the decisions before the Congress makes them.

The CHAIRMAN. Now if you got the formula for that you are the man I am looking for. You are the man the country is looking for.

Mr. JOHNSON. Senator, I am just a cracker engineer. I don't know about those things. Shall I proceed, sir?

The CHAIRMAN. Well, I hate to leave a subject as nearly undetermined as you have indicated. We are without a policy, but certainly I am just a country lawyer so I plead ignorance with you and recognize the policy jointly with you and more in the absence of it cooperatively with you and listen while you proceed.

Mr. JOHNSON. Thank you, sir.

I said if the Federal Government would adopt a clear, definite policy stating the type of projects they are interested in and a firm formula establishing the extent of Federal participation, the States and localities would be on notice of the limitation of Federal help. The present procedure whereby most projects are initiated by the locality or the State needs reviewing, change. Many projects of major importance to the Federal Government are not initiated under the present procedure until it is too late to construct the project at a reasonable cost. The Federal Government is in a better position than the State to know what projects have priority in the national interest.

One field in which the Federal Government should take an active interest before it is too late is the conservation of water by ground storage. It is estimated that in the United States the ground water available for use is 10 times the annual precipitation. We spend most of our conservation planning on storing the annual rainfall, often ignoring the ground water storage possibilities. The recharging and use of ground water is a delicately balanced operation that must be controlled to prevent excess withdrawals and salt water encroachment. The ground water storage is like a bank that will not tolerate overwithdrawals without penalties. A policy is needed for the State, the Federal Government's interest in ground water storage and conservation of water resources. Such a policy should also state the Federal Government's position with respect to the State's control of the use of ground water.

Florida offers two typical examples of potential ground water problems that may justify Federal interest and participation and in the conservation and development of this supply. The first is in northern and northwestern Florida where the deep well supply may originate in Georgia or Alabama. For instance, the water that made your coffee this morning may have fallen on Alabama as rain 100 years ago.

This is an interstate situation that could conceivably justify Federal interest.

The second problem is in peninsular Florida where both recharge and storage are entirely confined to the locality and no interstate factors are involved. This area may merit Federal interest because three-fourths of the U.S. production of phosphate, one-third of the known world production, occurs there.

Also, two-thirds of the citrus fruit production in the United States and one-fourth of the world production occurs in this peninsula of Florida. Both phosphate and citrus use large quantities of water in their production and processing.

The increase in production of both products within the last 15 years is beginning to result in notable conflicts of interest in the use of water.

The conflict of interest creating the greatest clamor in Florida is the use of water for recreational purposes. The increasing number of people involved in developing this problem into one that both Federal and State levels cannot continue to treat lightly.

The committee is apparently concerned with the value of water and the justifiable expenditures at all levels for the water resources development.

I gathered this from the advanced questionnaire and it is a difficult question to expect an answer to except given a given time, a given place, and a given objective. A man dying of thirst in the California desert has a different idea of the value of water than one drowning in one of Florida's numerous lakes.

But there are two related standards of value that may be considered applicable in all cases. As time progresses the use demand and the cost of supply both increase. It is gratifying to have this opportunity to appear before you gentlemen on this important subject to both Florida and the Nation and it is sincerely hoped that out of this series of hearings that we will have a clearly defined, definite Federal policy on water resources development that will in turn encourage the State and the locality to recognize their own responsibilities.

Thank you.

Senator HOLLAND. Thank you, Lamar.

The CHAIRMAN. Senator, I believe we will put in the record of this hearing here today an editorial in the Jacksonville Journal, headed "Water Is Our Life." Let it appear at the end of the testimony.

Senator HOLLAND. Good.

The next name I have is that of Mr. Carl Courtney representing Lake and Sumter Counties Landowners Association.

Mr. Courtney.

STATEMENT OF CARL COURTNEY, ON BEHALF OF LAKE AND SUMTER COUNTIES LANDOWNERS ASSOCIATION

Mr. COURTNEY. Thank you, gentlemen. What I have to say will be very brief. I represent a landowners association that came into being because of water conservation and control.

Our group was formed, made up of people who fought and worked for the conservation and control of waters in our central Florida area. Lake County and Sumter County do not have as many people in them

as Dade but our people believe just the same as they do. Since water controls have been put in, that which we fought for back in 1956 and 1957—our waters were so low we were crying for it. Then structures were put in and added to that extra rainfall came problems developed which have practically destroyed many of the homeowners on our lake fronts who have lived there for years and those of us who are in the farming business. Personally, I am a mulch farmer. I don't know how to talk before you people. There have been some mighty fine people come before this group today and I have truly been impressed. I have truly been thankful for what Mr. Wakefield and some of the other people said about our agricultural problems. I thought we were the whipping boy of the whole darn water proposition in the State of Florida for a long time. But this is a most encouraging thing, the most encouraging thing I have seen in a long time.

I have a farm right outside of Leesburg to mulch, which in May of this year was covered with a beautiful celery crop. Today it is flooded and under water. Water dumped into our basin from other areas has backed up on us and we are in a very bad position. I am just one small operation there but we have tied into our Cellwood farm group, which is comparable to what this gentleman from Dade County so aptly said. It is so important to our area. The reason we are here now is not to complain. All we want to do is compliment you on this water conservation and control proposition. We have gone to the engineers. We have discussed with them the problems involved and they have advised us that now that these controls are in they do not have ample outlets to take care of waters impounded when we have extra rainfall. Therefore, the important thing, so we have been informed, those of us who are bleeding, and my head is pretty bloody, is that outlets, additional and supplementary outlets should be provided, one of which in our particular area would be through Ahitty Chatty Creek, which runs off of property which we own into the Panasoffkee Lake and into Withlacoochee. That is water that comes out of Jacksonville would be diverted thereby into the gulf.

They tell me this, if we want to get something done for ourselves instead of trying to criticize all the time the thing for us then is to appeal to you gentlemen and to the Congress to get emergency funds to make a survey to determine what is the best way to take care of these excess waters when they fall on our conservation pool where water has been impounded and there is no more place for them to go in the ground, find additional outlets for that water to be taken care of. There is only one thought then I have to suggest that when we conserve water we try to make an outlet for it at the same time, not to destroy the people who are operating and farming and who have beautiful homes on the lake front.

I have with me back here Mr. Howard Young, who is president of the group up at Clermont and Groveland. They have been in flood state for a long time. Frankly, we figured for years we had no sympathy in our program. I am just glad to say this and I want to thank you, every one of you men so much for listening to it.

Seantor HOLLAND. Let me ask you a question. Where do the excess waters come from that you think have made your problems so acute just now, from what area?

Mr. COURTNEY. These waters arise in what they call the recharge area of the Green Swamp. It comes from Lake Louisa, Minnehaha,

and goes into the whole chain right through a little canal in Haines Creek. All the water must run out that comes form Apopka, approximately 50 square miles. The Minnehaha and Louisa and those lakes up around Groveland Lakeland have approximately 30 square miles. Then you come down to Harris, Mount Dora, Montclair and Eustis, and that has another 50 square miles of water. That goes in through a little creek called Haines Creek where we have a buried lot which is impounding water. We want it impounded. Although we are against sin we don't want so much good that we die with goodness. We have water running down our neck and out our ears.

Senator HOLLAND. Was not that structure put in by local interests?

Mr. COURTNEY. Yes, sir.

Senator HOLLAND. Not put in by the Federal Government.

Mr. COURTNEY. That is correct.

Senator HOLLAND. The only thing I knew of in that area that had been put in was the structure which you have mentioned and then a structure north of Lake Apopka that goes through Montclair—I think into Lake Dora.

Mr. COURTNEY. Yes, sir.

Senator HOLLAND. That, too, was put in by the two countries.

Mr. COURTNEY. That is correct, for which we pay taxes.

Senator HOLLAND. But I did not know of any Federal structures of any kind.

Mr. COURTNEY. No, sir, but we are told now that they impound this water and they have no outlets to get rid of it.

Senator HOLLAND. You mean these local structures?

Mr. COURTNEY. That is right. The only help we may get at all is from emergency funds appropriated to the Engineers Corps to work out a feasibility of a survey that would recommend the outlet of water maybe to the gulf or to increase the channelization which now exists to release more water in case of extra rains like we have had in the past few months. Frankly, we have been in flood stage or threatened with flood stage in our area ever since February of 1958. That is not a criticism of people who handled that particular arrangement, perhaps it is because we have not learned yet how to operate them properly. What we are talking about now from a Federal standpoint is that we need or we are told by engineers we need an appropriation to work out an overall program that goes beyond the bounds of our present water authority in the Oklawaha.

Senator HOLLAND. Thank you very much.

Are there any questions?

Is your land west of Harris?

Mr. COURTNEY. Two miles west of Leesburg, that particular property.

I would like to have, if I may, Mr. Howard Young from Clermont say a word, please, sir.

Senator HOLLAND. All right, Mr. Young.

STATEMENT OF HOWARD YOUNG, CLERMONT, FLA.

Mr. YOUNG. Thank you, gentlemen.

I had no idea this was going to happen, but I, just like Carl, am wet up to my ears. I might as well tell you about it.

Let me tell you first I am president of the Waterway Club in south Lake County. That is south of the area that Mr. Courtney has been talking about, just north of Polk County, which is Senator Holland's home ground. This thing called Green Swamp is something that I sincerely hope you gentlemen will understand pretty thoroughly before you go back to Washington.

Carl defined it rather loosely, and mine will be, but may be not so loose.

The Green Swamp area, referred to, I believe, in Mr. Wakefield's talk, while I was not here early enough to hear it, we have been going through an exhaustive study in that area now for several years. We know that some of our principal rivers have their headwaters in this area that we term Green Swamp. We used to speak of Green Swamp as being about 125 square miles, most of it in south Lake and north Polk. That area is the highest spot in Florida. Our chain of lakes, which is the headwater for our Oklawaha Basin, first at Palatka and then at Oklawaha Basin. Our lakes are from 100 to 120 feet above sea level. Get this point, please. The fall in our lake levels from the central part of Lake County about Leesburg or 14 miles south of Leesburg is 34 feet in that 13 miles. Going east and west from this Green Swamp area you fall from 120 feet to about 5 feet. So that your principal streams all originate not in this 400 square mile area up and down there that we have been talking about but have an area of about 100 square miles.

We have one area down there which I don't believe is over 10 miles square in which you have a watershed for the Kissimmee River in this direction, the Peace River area over here, the Palatka, runs straight north to the Atlantic, two miles to the left of Lake Louisa, the Welaka starts left and opens in the ground at this place.

All of this water originates right there in that one spot. We have known for years that the bulk of the fresh water in central Florida could be controlled from that area. It was our hope 10 years ago when we opened our present South Lake Waterway Club that we could get someone to listen to us. In 1955 some of you folks at Washington did listen to us. We got about $10,000, as I recall, to start a study. Later on, after the organization of the Florida Water Resources Department, when they took Mr. Helrong, who was our president on the lake authority for some time, made him chairman of that group, then you stretched the study and I believe just 2 years ago through efforts from 10 counties in central Florida and the State and some help from the Federal Government, we got together $55,000 to create or to do two more studies. Your geological group finished their studies last June. I think their report is about ready. There will be a report from Mr. Wakefield in about the same time, which is going to spell out a lot of things which we oldtimers down in the Clermont area have been trying to prove.

Now, I had no idea of speaking when I came up here. Now that I am here I have said my piece. Anything that you folks can do directly or indirectly that will take the water off our living-room floor, let our vegetable growers grow crops next year or to help us, realizing that the citrus trees drowned out, the oaks died and pines died. We won't be able to do that for many centuries. Gentlemen, our situation in south Lake County is pitiful. I, like Carl, felt that we were the

whipping post. It is our water that is drowning out Carl, because there is just more water coming into Green Swamp than can ever be discharged through 10 structures such as we have constructed in the north end of that county.

Let me tell you this. We are taking water today from Lake Louise, which is the head of our chain of lakes that create the Oklawaha River, and our water is 18 inches lower today than it was about 5 weeks ago. We are taking water from the Blinker Light in Haines City, which is 30 miles to the south. We drop that another 4 inches and then we feel the bulk of that water coming in our direction from Haines City now is going to move and hit Lake County, and then hit the gulf, where the part of our water should go. We talk about $10 structures down there. We can go into river valleys and creek valleys down there, dig them down and cut down as saddle here a quarter mile long and control our situation almost completely with pennies as compared with what we are talking about here today.

I don't know whether we can wait long enough to get into your Federal program. I don't believe our people are going to stay tied that long. It is just a pitiful situation. I think we all know that with just a few dollars, as compared with the millions that you gentlemen deal with, we can correct our situation if we divide our water down there, let part of it go to the gulf, part of it to the Atlantic, and so on. But we are helpless. That is why most of our group are here today, hoping that you folks have something for us. I know you will do everything you can. If we can be of any help to you down in Lake County, you just call on us.

Thank you very much.

Senator HOLLAND. Thank you, sir.

The only two additional names that are on the list prepared by the staff that I have are Mr. Thomas B. Hutcheson, chief engineer, Seaboard Air Line Railway Co., and Mr. David E. Wells, attorney for the Atlantic Coast Line Railway Co. Are they both here?

Mr. HUTCHESON. Yes, sir.

Senator HOLLAND. Are there any other names that should have appeared on here that I didn't know about and that the staff did not know about?

If not, Senator Kerr, we will just proceed to call these gentlemen and try to bring the matter to as speedy a close as we can.

Mr. HUTCHESON. Thank you, sir.

Senator HOLLAND. He is chief engineer of the Seaboard Air Line Railway.

STATEMENT OF THOMAS B. HUTCHESON, CHIEF ENGINEER, SEABOARD AIR LINE RAILWAY

Mr. HUTCHESON. Senators Kerr, Young, and Holland, ladies and gentlemen, as Senator Holland said, I am the chief engineer for the Seaboard Air Line Railroad Co., which has its general offices in Richmond, Va.

The Seaboard has approximately 4,150 miles of main tracks in the six States through which it operates. Of this mileage, 28 percent is in the State of Florida, or approximately 1,456 miles. I am here today as a representative of that railroad company and as chairman of

Zone 3 Committee on Waterways of the Association of American Railroads. This committee consists of those railroads operating in the southeastern United States. The committee reviews periodically waterway projects which are proposed for consideration by the Corps of Engineers or by local groups and so forth.

The railroads are not opposed to and particularly in the southeast have not opposed waterway projects as such which might involve the improvement of existing waterways or the construction of new waterways. There are many such projects which will be of real economic benefit to the area involved, and these receive the wholehearted support of the railroads, some of them being here in the State of Florida. Some projects which come to mind at the moment are the Jacksonville Harbor expansion, Tampa Harbor project, and the west coast of Florida inland waterway project, which was pointed out on the map there, and the Central and Southern Florida Flood Control District project, in which the Seaboard has been intimately involved for some years and have worked with that flood control district in its problems. We do, however, oppose those projects which are not economically justified, the cross-State barge canal being one that we believe does not justify any expenditure of public funds.

My purpose in appearing before you at this time is to point out to you those railroads which are in opposition to the proposed cross-Florida barge canal and also to introduce into the record two documents for the members of this committee to read.

The railroads having a part in the preparation of the two reports are:

Atlantic Coast Line Railroad Co.
Central of Georgia Railway Co.
Chesapeake & Ohio Railway Co.
Louisville & Nashville Railroad Co.
Seaboard Air Line Railroad Co.
Southern Railway System.

The Central of Georgia and the Chesapeake & Ohio Railway do not operate in Florida, although they are members of the southeast waterways committee.

The CHAIRMAN. You refer to the two documents I hold in my hand?

Mr. HUTCHESON. Yes, sir.

The CHAIRMAN. You may file sufficient copies of these with the committee so that they will be available for reference and that will obviate the necessity of typing them at length in the record.

Mr. HUTCHESON. Yes, sir. Any number that the committee wishes.

Senator HOLLAND. Fine. All right.

Mr. HUTCHESON. Earlier this year the waterways committee which I represent requested Dr. Charles Welsh to undertake an analysis of the "Economic Restudy on the Florida Barge Canal" which was prepared by the Corps of Engineers, U.S. Army, and dated January 10, 1958. Dr. Welsh is director of the graduate program in business administration and associate professor at Rollins College, Winter Park, Fla. I should like to introduce his critique dated March 1959 into the record and to distribute copies among you gentlemen for reading.

The CHAIRMAN. Do you have a copy of it there?

Mr. HUTHESON. Yes, sir; I have a copy of it in Dr. Welsh's report.

The CHAIRMAN. That, I believe, is the one I just referred to and which you said you would supply us sufficient copies so that we will have them with the report but not be made a part of the record.

Mr. HUTCHESON. That is right.

The CHAIRMAN. All right.

Mr. HUTCHESON. And the waterways committee also prepared a preliminary analysis of this same economic restudy report and that is the brown document.

The CHAIRMAN. All right.

Mr. HUTCHESON. I would like to introduce that into the record.

These two very comprehensive reports outline some of the inaccuracies found in the economic restudy report on the barge canal, with the conclusion that the entire project is wholly unjustified and would not economically benefit the public in relation to its cost. I trust that each of you will find the time to digest these two reports as there are many pertinent facts contained therein which point out fallacies in the report.

One important factor that must be given very thorough study and which has not, in our opinion, and in the information which we have comprehensively studied to date, been gone into, is the possibility of physical damages in central and southern Florida as a result of seepage and manipulation of flow levels. This could cause lake overflows, the appearance of new ponds, or the drying up of present water sources. Some results of this nature have occurred in the Bainbridge, Ga., area where a dam was constructed. These can be seen there today. Incidentally, some of them will eventually affect our track there unless the water starts to go down. There has not been reported an adequate investigation of the subsurface strata made to insure that no adverse effect on the water table or the supply of water will occur as a result of the construction of the Florida barge canal.

The benefit-cost ratio established by the Corps of Engineers in its 1958 economic restudy of the cross-State barge canal is 1.05 to 1; slightly, very slightly, in excess of unity. This project was authorized in the 77th Congress on July 23, 1942. A restudy made by the Board of Engineers for Rivers and Harbors in 1946 failed to establish its economic justification. In 1954, the project was removed from the "active backlog of authorized projects" by the Chief of Engineers and was placed in the classification of "deferred for restudy."

I submit, gentlemen, that some 17 years after the cross-Florida barge canal was first authorized by Congress, the project is still economically unjustifiable, as can be readily determined from a thorough analysis of the economic restudy dated January 10, 1958, as submitted by the corps and by reading the two documents that I have introduced into the record at this hearing today.

The CHAIRMAN. Thank you very much, Mr. Hutcheson.

Mr. HUTCHESON. Thank you, sir.

The CHAIRMAN. Mr. David E. Wells.

STATEMENT OF DAVID E. WELLS, ATTORNEY, ATLANTIC COAST LINE RAILWAY CO.

Mr. WELLS. Senator Kerr and Senator Young, Congressman Bennett, I am the Coast Line representative on Mr. Hutcheson's committee. I speak for the Atlantic Coast Line, which I do not think

anyone will deny is a substantial citizen of this State, a citizen that has a very high stake in the future of this State.

I feel somewhat like a bump on a nice, round log. I am about to say something that is about to strike a sour note in all of this harmony today. So you won't throw me out, I think I better say I know you will agree with me that the foundations of democracy are the right of people to have differences of opinion, the right to express those differences and to know that our representatives are going to be fair and impartial in considering those differences.

I might also help if I said that in the last session of Congress over $73 million was appropriated for public works projects in the six States through which we operate. Over $15 million was appropriated for use in the State of Florida. The Coast Line has not opposed any of those grants. I want this committee to know and the people in Florida to know we are 100 percent behind many of the fine ideas expressed here today. We are behind any project which has been justified by the application of sound, economic principles and scientific techniques and methods. However, I am sorry to say we do not agree that the Florida cross-State barge canal project has been so justified.

I also refer you to the reports submitted by Mr. Hutcheson, and I would like to remind you that many of the criticisms therein have not been answered. I would like to say one thing for the benefit of the committee that is not brought out in the reports.

Gentlemen, the idea has been expressed that the Florida cross-State barge canal is a missing link in an intercoastal waterway system for the United States. Behind this idea also is the further though that as a missing link being filled in it would have great national benefit, by tying together all of our intercoastal waterways. Senator Holland observed, however, that from Apalachicola down to the mouth of the Withlacoochee River, where the cross-State barge canal would come out, we do not have a canal. That is another missing link which we have. So there are really two missing links in trying to tie up the Atlantic intercoastal waterway and the intercoastal waterways running from Texas around down to Apalachicola. I would also like to point out that we have already in this State a cross-State barge canal, right through here, and the information that we have is that that canal is far from being utilized to full capacity.

The fact that we do not have a canal from Apalachicola to the mouth of the Withlacoochee River is significant for this reason. Very recently in a proceeding before the Maritime Board, Captain Ingersoll, president of the Federal Barge Lines, testified that out of the 3,000 to 4,000 barges operated by American Waterway operators, only 40 to 50 of those barges are constructed so—or have drafts sufficient to allow them to operate on the canals as well as in the open gulf.

So barges coming out of the Atlantic intercoastal waterway across here and up to Apalachicola would have to be able to traverse the open gulf. Some day perhaps the situation will be such that this canal can be justified but we just don't think it is now.

That is all I have to offer, gentlemen.

The CHAIRMAN. Thank you very much, Mr. Wells.

Let me say to you that the purpose of this committee is to get all of the evidence possible from every viewpoint applicable and then

try to arrive at a decision which at least in the minds of those reaching it will be fair and impartial.

Is Captain Leighton of Martin County here?

Captain LEIGHTON. Yes, sir.

STATEMENT OF CAPT. BRUCE G. LEIGHTON, CHAIRMAN, WATER CONSERVATION COMMITTEE OF MARTIN COUNTY

Captain LEIGHTON. Senator Kerr, Senator Young, I am the chairman of the Water Conservation Committee of Martin County.

Martin County is a small county which embraces an area of roughly 300 sections, 300 square miles that lie in the lands between the St. Johns marshes on the north and the Everglades on the south.

Through Martin County runs the St. Lucie Canal, which is the principal regulatory outlet for Lake Okeechobee at the present time.

Wholly within Martin County lies the estuary of the St. Lucie River, which joins the Indian River in an outlet at St. Lucie Inlet.

Nature designed the St. Lucie estuary and the meandering streams that lead into it to accommodate the requirements of the vegetable, animal, and marine life of an area of roughly 700 square miles.

In the course of drainage projects which have been carried on for a good many years and accelerated in the recent years, diversion ditches and channels have been built that feed into the St. Lucie River, the major part of the excess runoff from an area of roughly eight times the natural watershed of the St. Lucie River.

The estuary and its meandering streams constitute what is widely known as one of the finest natural resources for recreational boating and fishing that there is anywhere.

Because of the large floods of drainage water from the drainage activities which have been taking place throughout the Kissimmee Valley and in the upper St. Johns Valley, these floods of water passed through the Roosevelt Bridge which enters Stewart on the north where you have a ringside seat of the downstream effects of overdrainage and lack of conservation upstream.

Since the formation of the flood control district and for the southern flood control project of 1949, we have watched with much interest and high hopes that it would be completed and carry out the fundamental purposes for which it was designed.

During that time we have seen mudlands and silt shoals appear over white, sandy bottoms which once were 12 feet deep.

The economy of Martin County is very largely dependent upon the tourist trade and the recreational trade, and the recreational facilities of the St. Lucie estuary and its tributaries. Martin County is hurt very badly at the present time because the marine life has been very largely destroyed, the fishing has gone to pot, and the tourist who used to come does not come to us any more.

These are merely some of the secondary results of lack of coordination.

I say that thus far the works that have been done, that have been accomplished under the central and south Florida flood control project and under these great conservation projects which we have in mind have mostly been directed not to the conservation features but very largely to the drainage features in continuation of past development of drainage over a good many years.

In speaking of the basic purposes of this conservation project I have listened today to the testimony of everybody here, which is very much in line with the many reports that were published in House Document No. 643 of the 80th Congress, 2d session, where a representative of the Engineers Corps outlined in one paragraph a situation which is fully confirmed by the advices and the testimony of everybody here.

I would like to bring to the attention of this committee one very eloquent paragraph that appears in that report, paragraph 43 on page 32. With your permission, for emphasis, I would like to read it to you. It goes under the title of "The Basic Problem."

It says this:

> In its natural state the part of central and southern Florida considered in this report was a vast wilderness of water, forest, prairie and marshland, the forces of nature had combined to establish a fine balance which supported the vegetable, animal, and human life that prevailed and resulted in building up the land to the condition in which the white man first found it. A large part of this land, the Everglades, was still in the formative stage when its development began. The inherent fertility of the area and its resources made its development and use inevitable. This development, however, resulted in physical changes which altered the natural balance between water and soil and much of the development was undertaken without any real knowledge of the area or of the hazards involved. The parks, prairies, and burning public lands of the Everglades in 1945, the flooding of thousands of acres of farms and communities in 1947, and the intrusion of salt water into lands and water supplies of the east coast are basically the results of altering the balance of natural forces. The basic problem of this area is therefore to restore the natural balance between soil and water in this area insofar as possible by establishing protective works, controls and procedures for conservation and use of water and land.

I would respectfully suggest to this committee that that paragraph might very well be placed in the first portion of a national policy.

We thank you very kindly.

The CHAIRMAN. Thank you very much, Captain Leighton.

Senator HOLLAND. Mr. Chairman, I have no other names of persons from Florida who have asked to appear.

There is one further comment I would like to make and have added to the testimony of Mr. Buckman. He has made this very pertinent comment in a note which he just sent me. The total of the public works appropriations for the fiscal year 1960 is 1.7 percent of the total appropriations for 1960 after excluding $8 billion for interest on the national debt. I think that would indicate how limited an investment we are making in the development of the public resources of our Nation and I would think that that should be added to Mr. Buckman's testimony.

The CHAIRMAN. Fine, and we will add this statement by the chairman.

The increased cost of the national debt for fiscal 1961 compared to fiscal 1952 on the basis of current trends in interest rates would be about $3½ billion. That is, the interest on the national debt for fiscal 1961 will exceed the interest on the national debt for fiscal 1952 by between $3 and $3½ billion, which is much more than twice the total amount appropriated for the entire public works, natural resource development for fiscal year 1960.

Senator HOLLAND. Glad to have you add that. This gentleman?

STATEMENT OF NEY C. LANDRUM, FLORIDA SHORE & BEACH PRESERVATION ASSOCIATION

Mr. LANDRUM. I didn't request any time to say anything. I merely wanted to submit for the record a statement on behalf of the Florida Shore and Beach Preservation Association.

It is not a water problem per se but I think it is a matter that should be considered in conjunction with your water resource plan.

The CHAIRMAN. Your name?

Mr. LANDRUM. My name is Ney C. Landrum.

The CHAIRMAN. Mr. Landrum.

Very good. Submit your statement to the reporter.

(The prepared statement follows:)

STATEMENT BY THE FLORIDA SHORE AND BEACH PRESERVATION ASSOCIATION

The Florida Shore and Beach Preservation Association is composed exclusively of responsible public officials of State and local governmental agencies concerned with the growing problems of beach erosion and beach preservation. The objective of the association is to protect and restore the ocean, gulf, and fresh water lake beaches of Florida for enjoyment by the citizens of the State and the more than 8 million annual visitors.

Inclusion of beach erosion problems within the scope of the review by the Senate select committee is justified on the basis of Public Law 727, 79th Congress, and Public Law 826, 84th Congress, which express the Federal interest in beach erosion control and provide for financial participation in studies and remedial work by the U.S. Army Corps of Engineers.

The extent of existing beach erosion problems is graphically portrayed on the attached map.[1] It is particularly significant that the most serious erosion occurs in areas of maximum tourist activity and rapid population growth. It also is apparent that serious erosion problems develop almost without exception in areas located on the downdrift side of important navigation inlets.

Studies by the U.S. Beach Erosion Board and by the Coastal Engineering Laboratory of the University of Florida reveal a continuous movement of sand along the beaches of the State, generally in a north to south direction. Natural beaches tend to remain stable as long as this sand drift is uninterrupted. Inlets, especially those with extensive jetties, obstruct the natural movement of sand, diverting it into deep water where wave action can no longer feed it to the beaches downdrift from the inlet.

It is now clear that this interference with the littoral drift of sand results in severe erosion immediately downdrift from the inlet, as sand continues to move under the action of waves and storms without the new supplies diverted or obstructed by the jetties. Erosion continues down the beach throughout the years, destroying the beaches for recreation and changing the natural beach slopes in such a manner that storm damage is intensified. The experience in southern California with littoral drift of sand has demonstrated this phenomenon conclusively.

Necessary remedial action is threefold. First, structures which will tend to increase erosion must be regulated through a permit system. This is now being attempted by the State. Second, sand which accumulates on the updrift side of the jetties must be transferred to the other side to provide a continuous supply for downdrift beaches. Facilities for this purpose, such as the sand bypassing plant now operating in Palm Beach, have proved generally successful. Third, sand from some other source must be provided to replenish the most seriously eroded areas. In many instances, sand for artificial nourishment can be obtained from the dredging of the Intracoastal Waterway and similar navigational improvements.

Increasing interest by the State of Florida in its beach erosion problems has resulted in recent years in the creation of a Coastal Engineering Laboratory at the University of Florida and in the legislative designation of the trustees of the State internal improvement fund—an ex officio cabinet board—as the erosion

[1] Not suitable for reproduction.

agency for the State, with authority to expend money from this fund for erosion control work. In addition, authorization for the creation of local erosion control agencies was established by the legislature in 1941, and a number of programs have come into being since that time.

Deterioration of Florida's prized beaches and coastline still ranks as one of its major problems of conservation, however, and a maximum public effort will be necessary if these priceless natural assets are to be saved. One of the most important phases of this tremendous task is the education of the people of Florida in the public nature of this problem. Beaches are essentially public property, and the benefits from the protection of these great scenic and recreational features are far more general and public than specifically to the owners of private properties adjoining the shore. It is true, of course, that beachfront property owners do realize some of the more immediate and apparent benefits from erosion control, but these are almost invariably predicated on necessary supplementary measures, such as seawalls and groins, which must be installed at purely private expense. Gaining full public support for a comprehensive statewide program is indispensable to the effective preservation of beaches in Florida.

In bringing these matters to the attention of the Senate select committee, the Florida Shore and Beach Preservation Association hopes that the committee will take cognizance of the seriousness of beach erosion problems in Florida and the extent to which these problems should be shared by the Federal Government as a proper exercise of its public responsibility.

The CHAIRMAN. Do you have any observations, Senator Holland?

Senator HOLLAND. I would like to express my thanks.

Mr. Chairman, might I express the appreciation of the people of Florida and particularly of those who show their interest in this vital subject matter by coming, and some of them long distances, to attend this hearing.

We appreciate your coming here and Senator Young's coming here and your bringing your able staff here to get a bird's eye view of our long time problems in connection with water conservation.

We are very grateful to you. We want you to know that we consider this set of problems one of the Nation's that we have to help solve by our own efforts, by private efforts, by local organizations, State, but that the Congress, we feel, has a definite responsibility, speaking for the whole Nation, and we know you feel the same way.

We are grateful for your coming and we hope that the hearing will have produced some matters of interest to the committee and to the Congress.

Senator YOUNG. I think the very able Florida delegation in Congress and the people of Florida are to be commended for the informative presentation today.

I do not know of a hearing that I have attended where we have had a more able group of witnesses than you have had today.

There were several things that stand out and one of them in particular is the sizable contribution that the State and political subdivisions of Florida are making toward the water development program.

I notice that there was some concern lest you would continue to make a higher percentage of contributions than other States. But I think in the long run it will pay off. It is a good policy on which other States should pattern themselves.

It has been a pleasure to be with you.

The CHAIRMAN. Congressman Bennett.

Representative BENNETT. I want to express my deep gratitude for the committee coming here, and thanks, all.

I think it is very deeply felt that you were kind enough to come to our area and let us make these presentations.

Thank you, sir.

The CHAIRMAN. We are glad to have been here. We think it is one of the finest we have heard, as Senator Young has just said.

It is indicative of a great alertness on the part of the people of Florida and their delegation in the Congress and those who arranged this group of witnesses to be here to testify, alertness with reference to your problems, the responsibility inherent in those problems and the tremendous opportunity for growth and expansion available, as together with the Federal Government you attack the task of solving the problems.

We are glad to have been here.

We appreciate what you have said and the committee is standing in recess.

(Whereupon, at 3:20 p.m., the committee adjourned.)

(Subsequent to the closing of the hearing the following statements were received for inclusion in the record.)

[From the Jacksonville Journal, Dec. 8, 1959]

WATER IS OUR LIFE

Fewer subjects are worthy of more concern than our Nation's water resources that are being discussed here today by a U.S. Senate committee, as part of a national investigation of the matter.

In a State blessed with such an abundant supply of water, there is danger than we will become neglectful of our duty of stewardship toward that with which we have been so richly endowed—one of the higest annual rainfalls in the Nation and tremendous underground reserves of water.

Water becomes increasingly important as our national, State, and local population swells and industrialization spurs the need for more water. Water wars, reminiscient of the days of the old West, may afflict urban sections of the Nation.

People crowded together accentuate the problem of pollution. We have a shameful situation here where for years we have allowed the dumping of raw sewage into our local rivers and streams. The current sewerage program will put a stop to the dumping, but a project remains to be undertaken to clean up the sewage that has been and is still piling up.

As industrialization increases here and over the State, the problem of discharging industrial effluent into our streams increases. Unchecked this could pollute so badly the wellspring of our prosperity that instead of attracting water hungry industry to our borders, the water situation could repel industrial prospects.

Florida is fortunate in its department of water resources, ably directed by John Wakefield. If the voice of Wakefield and others equally devoted and well informed on the subject of water conservation and utilization are heeded, then the State's future, from the standpoint of health, recreation and industry will remain bright.

STATEMENT BY HENRY TOLAND, VICE PRESIDENT, THE EXCHANGE NATIONAL BANK, TAMPA, FLA.

The people of Tampa are becoming increasingly aware of the importance of water resources development. The port of Tampa is the largest port between Norfolk, Va., on the Atlantic coast and the port of Mobile on the north gulf coast. With its naturally fine harbor, and blessed by abundant municipal and industrial water supplies, Tampa—as a city—has not, in the past, been too concerned with water problems. Now, however, as Tampa is growing rapidly into a metropolis and begins to widen its interest beyond the city limits to encompass those of our entire area, we see the tremendous importance of rapid development of the program which has been presented to you today.

From a navigation standpoint, our principal interests in the past have catered to seagoing traffic. During the past few years, however, we have seen developing in Tampa a very important movement by combination inland-oceangoing barges, coming primarily from the Mississippi Valley and gulf coast areas.

As our city and State continue to grow, we become more and more aware of the necessity of putting Tampa on the inland waterways system. It is the largest port in the United States—connected to the waterway. From the standpoint of exported bulk tonnage, it is the third largest port in the United States; and yet it is not on the inland waterway. Tampa, being centrally located, is in the heart of the greatest industrial development. To realize its full potential, it must soon join up with the national inland waterway system.

Our primary interest is, of course, the Intracoastal Waterway from Carabelle to Tampa Bay, followed closely by the Cross-Florida Barge Canal. We place the intracoastal canal first because the necessity for it is less understood.

This waterway is presently in the proposed status. It was the subject of a brief study made some 6 to 8 years ago by the Corps of Engineers with funds borrowed from other sources. This investigation was necessarily inadequate. Its findings were not favorable, but these findings have never been definitized in a final unfavorable report—but rather, the project has been marked for a rehearing at some indefinite time. We should delay no longer in completing the Engineers' investigation of the feasibility of this route for these reasons:

1. Navigation requirements, and actual tonnage presently being moved and tonnage seeking waterways movement are totally different now than they were 5 years ago.

2. The geography of the route is undergoing revolution.

3. Other areas of the Nation—notably the Texas and Louisiana coast and the Mississippi Valley—are aware of the importance of extending their waterways to the important port of Tampa and are clamoring for such extension.

Within the last 2 years, coal—at the rate of 1 million tons a year—has begun to come to Tampa where none has come before. Within the last 7 years, Tampa has developed as the major sulfur importing point in the world because of the development of our fertilizer chemical plants. The expansion of these plants continues and sulfur tonnage, consequently, continues to grow. Tampa has long been known as the principal phosphate exporting port of the world. Petroleum consumption rapidly increases. The chemical industry—as exemplified in the form of one nitrogen plant existing and one soon to be built, a synthetic cryolite plant existing and soon to be expanded, a glass manufacturing plant under construction—is only in its infancy in the central Florida area. Our type of industry demands low-cost water transportation. As Florida becomes more and more an important center of population, this population will have to be served by all forms of transportation.

As to geography, until the last 2 or 3 years, the area traversed by this waterway has been almost untouched by man, with the exception of two or three tiny fishing villages. The entire coast was typified by mangrove islands, cedar and oak hammocks, abundant wildlife, and little else. With our tremendous population increase, this area has been touched by development and is growing, populationwise, by leaps and bounds. Not for over 10 years has Florida been devastated by destructive hurricanes—but within the memory of all of us, our west coast area has been hit by many destructive storms, similar to those which have in recent years damaged the Louisiana and Texas coasts.

New villages and towns, springing up in this west coast area in the Homosassa, Cedar Keys, Crystal River, and other areas, would surely be heavily damaged should a storm strike now. It will be a principal side benefit of the construction of this waterway that the creation of offshore islands would lessen the wave action and retard the flow of tidal water over the coastal area.

The Intracoastal Canal Association of Louisiana and Texas and the Mississippi Valley Association have, several times in the last 2 years, taken the unprecedented step of meeting here in Florida outside their own areas, simply because both organizations realize the importance of expanding the national waterway system into and through Florida. Only 2 days ago, the American Waterways Operators Association held its quarterly meeting right here in Jacksonville. While we here in Florida have considered our projects to be of local nature, they are, in fact, of primary national importance and I believe would be rated as top priority by any of the waterways studies.

STATEMENT OF WARRIOR-TOMBIGBEE DEVELOPMENT ASSOCIATION, BY JACK WARNER, PRESIDENT

I am Jack W. Warner of Tuscaloosa, president of the Warrior-Tombigbee Development Association, a privately financed, nonpartisan, nonprofit membership organization representing hundreds of individuals in all walks of life and numerous business and industrial concerns. The association's sole purpose is to promote the orderly, comprehensive modernization of the Warrior-Tombigbee Waterway in Alabama for navigation, flood control, pollution abatement, water supply, hydroelectric power generation, recreation, and allied purposes.

The waterway—known legally as the Black Warrior, Warrior, and Tombigbee River—is the longest improved inland barge channel in Alabama and is one of the country's oldest Federal navigation projects. It extends for approximately 465 miles from its mouth in Mobile Bay to the uplands of north-central Alabama near Birmingham. (See attached map.)

Sixteen counties in the western portion of Alabama are directly influenced by the Warrior-Tombigbee and the plan for its improvement. Covering a total of 15,200 square miles, these counties comprise less than 30 percent of Alabama's land area but have more than 40 percent of its population.

Industrial activity along the waterway, once concentrated in the Birmingham district, has in recent years spread throughout the tributary area, and today includes major operations by the steel, metal fabricating, paper, chemical, mining, petroleum, timber, aluminum, cement, and shipbuilding industries. Located in the 16-county basin are 40 percent of Alabama's manufacturing establishments, nearly 44 percent of its industrial workers, and more than half its industrial payrolls.

Since 1955, according to figures of the Planning and Industrial Development Board of the State of Alabama, approximately $330 million has been invested by industry for new and enlarged plant facilities along the Warrior-Tombigbee, and this does not include substantial outlays for improvements to public utilities and transportation systems. These investments have affected every county in the valley and virtually every community.

The more noteworthy developments during the last several years have been highlighted by the construction of multimillion-dollar paper producing plants on waterside sites at Demopolis and Naheola; the expansion of papermills in Mobile; the investment of more than $150 million by chemical companies which located near a salt dome in Washington County; the opening of new coal mines in the upper valley, and the construction of a major new steam-electric generating plant on the waterway immediately above Mobile.

As indicated by its attraction for industry, the Warrior-Tombigbee Valley is richly endowed with natural resources. One of the Nation's most extensive and valuable deposits of coal lies athwart the upper waterway in Walker, Fayette, Tuscaloosa, Jefferson, Winston, and Cullman Counties. With reserves estimated at more than 50 billion tons, it is the country's only major coalfield on a canalized river less than 400 miles from a tidewater port. Other basic materials found in quantity in the valley are salt, iron ore, dolomite, limestone, sand and gravel, crude petroleum, and timber.

Of the resources abounding in west Alabama, however, none is more vital or offers greater potential than the Warrior-Tombigbee Waterway itself. If the economy of this area is to more completely develop and contribute a fuller share to the wealth of Alabama and the Nation, it is essential that the Warrior-Tombigbee River system be modernized to meet the mounting need for waterborne transportation.

The waterway has been used commercially for more than a hundred years, and today is one of the busiest water arteries in the southeast. In 1958, last year for which official figures are available, it carried a record high of 5,666,203 tons of commerce—a gain of 792,212 tons or about 16 percent over 1957, and an increase of 3,607,699 tons or 175 percent over 1948.

For the most part, the waterway's movements consist of such bulk commodities as iron ore, coal, sand and gravel, limestone, crude petroleum, gasoline, clays and earths, and heavy packaged products. These cargoes are transported to a great extent in tows of 7 to 11 barges, each 25 feet wide and 140 feet long and carrying at maximum draft 500 tons. Also operating on the Warrior-Tombigbee is an increasing number of dry cargo tows consisting of one to three barges which are 35 to 50 feet wide and 175 to 220 feet long and carry from 1,100 to 2,500 tons. Liquid cargoes are moved in tows of one, two,

or three tank barges ranging from 30 to 50 feet wide and from 120 to 260 feet long. Their individual capacities are 500 to 3,000 tons.

Although the forerunner of these modern towing vessels, the steamboat, began operating on the Warrior-Tombigbee as early as 1818, it was not until 70 years later that a program was undertaken for the stream's canalization. Between 1888 and 1915, a system of 17 dams and 18 locks was constructed, opening the waterway to year-round navigation from Mobile to points on its headwater tributaries, the Locust, Mulberry and Sipsey Forks, north of Birmingham.

Although the packet steamer, for which they were designed, had long since disappeared, all but three of the original locks and dams still remained at the end of World War II. They were outmoded, obsolete, and woefully inadequate to serve modern barge shipping. To further aggravate matters, several of the projects were deteriorated to the point that they presented a real danger of total collapse. The dams were designed as low structures to maintain a 6-foot navigation channel. When barges and towboats were introduced to the river, masonry crests and flash boards were added to increase the height of the dams in an effort to provide the 9-foot depth these vessels require. At best, this was an expedient and makeshift arrangement, and was insufficient to overcome the restrictions caused by low water, shoals, and currents.

The locks, averaging 52 feet in width and about 285 feet in length, impose even more serious problems. Because of their limited size, they can lock only three 500-ton barges and a towboat or four barges at one time. Consequently, multiple-barge tows must break formation, transit the structures in two or three lockages and regroup on the opposite side. The operation requires about 1½ hours for a 7-barge tow and approximately 2¼ hours for an 11-barge tow. When the larger barges are employed, double lockages must be made when only two barges are in tow.

Under a comprehensive plan projected by the Corps of Engineers, U.S. Army, all of the old locks and dams are being replaced by modern navigation structures. When the program is completed, the waterway will be canalized by 6 projects as opposed to 17 originally.

The new, higher dams will create long, deep water pools ensuring speedier and more efficient towing operations, and the locks—600 feet long and 110 feet wide—will reduce locking time for all tows to 30 minutes.

Through the wisdom and foresight of the Congress which has clearly seen the need and merit of improving the Warrior-Tombigbee Waterway, progress to date has been most gratifying. The first new facility to be built in the current program was the Demopolis lock and dam, dedicated in 1955 as a replacement for four of the old structures. Located just below the confluence of the Warrior and Tombigbee Rivers, it creates a pool extending 50 miles upstream, and, according to actual operating data, is saving large tows more than 2 full days of travel time per round trip.

Warrior lock and dam, which has reduced travel time by up to 40 hours per voyage, was completed in 1957 at the upper limits of the Demopolis Pool to eliminate two more obsolete structures, and provide an improved channel reaching 80 miles upstream to Tuscaloosa. Along the lower Warrior-Tombigbee, the Jackson lock and dam is under construction to modernize a 100-mile reach by replacing three of the old projects. Under the present schedule, the lock is to be opened to navigation during the third quarter of 1960.

These three new porjects will make the Warrior-Tombigbee a fully usable, efficient and economical carrier of commerce for made than 350 miles between Mobile and Tuscaloosa. However, there remains a critical need for improving the channel above Tuscaloosa by constructing the proposed Holt lock and dam as a replacement for existing locks and dams 13, 14, 15, and 16. Holt lock and dam is the last all-new structure necessary on the main stem of the river, since the John Hollis Bankhead lock and dam, built in 1915, and the William Bacon Oliver lock and dam, built in 1940, will be incorporated into the six-project canalization system projected by the Army Engineers.

Locks and dams 13 through 16, constructed between 1905 and 1915, are located along an 18-mile reach between the Oliver Dam at Tuscaloosa and the Bankhead Dam, the northernmost navigation project on the waterway.

The major difficulty encountered by navigation about Tuscaloosa is caused by the small size of the locks. Since only four 500-ton barges can be handled at one time, the large tows must transit in segments, a costly operation taking up to 2¼ hours at each of the four locks. When multiple lockages are made, tow

haulage equipment on shore is used to pull barges from the lock chamber. Because there is little clearance between the barges and lock walls and sills, considerable difficulty is experienced in pulling the vessels from the chamber, especially during low river stages. The towing units ride on the gate sills until the volume of of water they displace in the chamber is replaced through culverts in the sides of the locks. Because of limited approach conditions, long tows must place a line on a timber guide crib and carefully maneuver into a favorable alinement when entering or leaving the locks, causing a still further delay. Tows also lose considerable time when high water and currents either close the locks or make navigation too hazardous for normal operations.

Another problem is traffic congestions. Greater and greater volumes of commerce are being transported over this reach of the river, as indicated by Corps of Engineer tabulations which show that in 1957 about 53 percent of the total waterway traffic moved about Tuscaloosa, as compared with 38 percent in 1949. Traffic congestion is a bottle neck for all tows but deals a particularly severe blow to single lockage tows. Since the existing four locks are in close proximity to one another, the small tow often is delayed by as much as twelve hours when it must follow a multiple lockage tow.

Delays and interruptions to operations along the upper waterway are a growing problem that can only become worse as new commerce is attracted. Until they are removed, the value of the new project to the south will be nullified to a marked degree.

Essentially, Holt lock and dam—which the Army Engineers estimate will save an average tow of eight 500-ton barges almost 22 hours per round trip—will consist of a gated spillway 758 feet long and a 600- by 110-foot lock with a maximum lift of 63.6 feet. In addition, the overall plan calls for the future installation of a hydroelectric generating plant. The project will be built about 9 miles upriver from Tuscaloosa and about 2,800 feet downstream from present lock 13.

A significant step was taken in December 1958 when the Secretary of the Army, acting under authority of the River and Harbor Act of 1909, authorized construction of Holt lock and dam for navigation benefits. Additionally, he acted under authority granted him by the River and Harbor Act of 1912 and authorized the inclusion of preliminary features necessary for the future development of power.

Alabama Power Co., a privately owned public utility, has, on the basis of preliminary studies, filed an application with the Federal Power Commission for a license to construct the proposed powerplant, and has indicated its willingness to fully coordinate its plans with those of the Corps of Engineers.

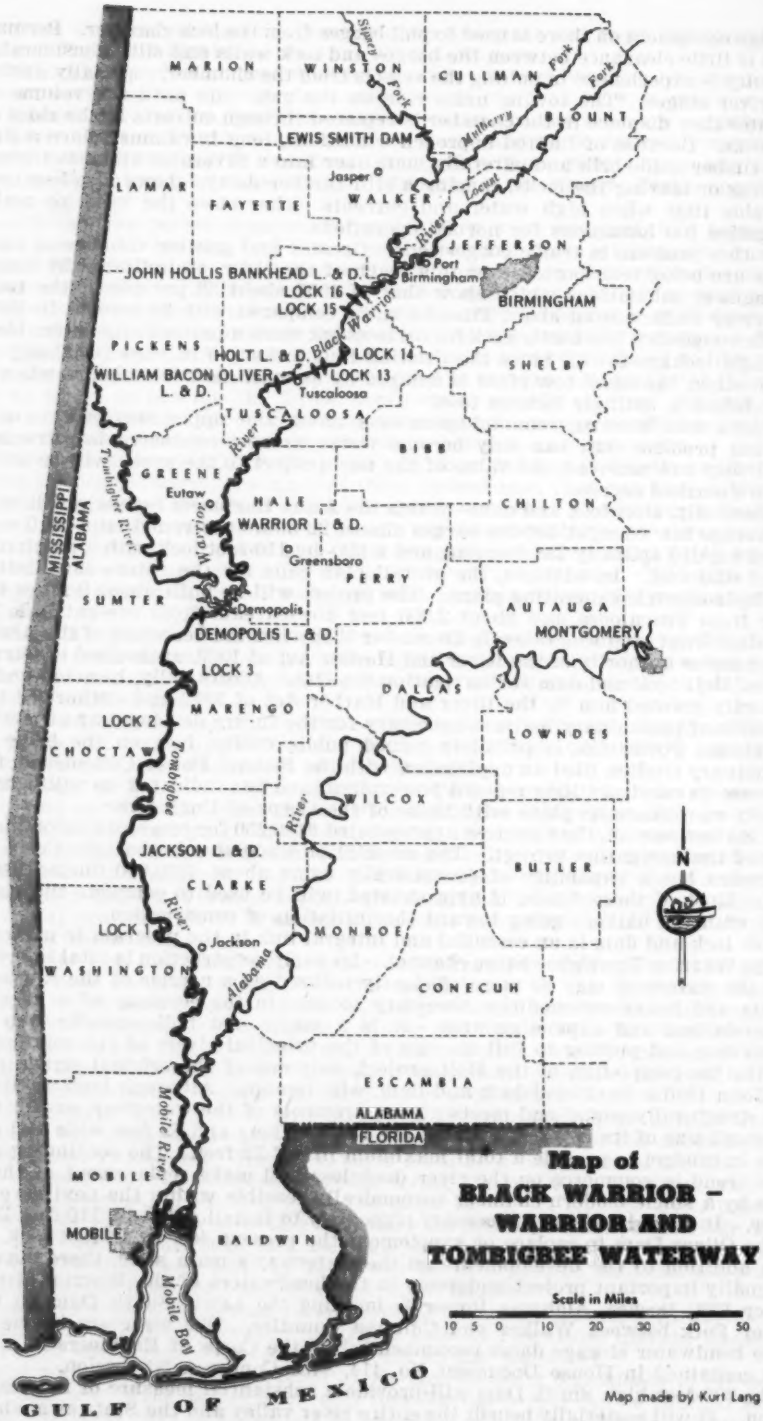
At its last session, the Congress appropriated $146,250 for preconstruction planning of the navigation project. The association understands that the Corps of Engineers has a capability of economically using about $600,000 during fiscal 1961. Most of these funds, if appropriated, will be used to complete the planning, with the balance going toward the initiation of construction.

Holt lock and dam is an essential and integral link in the program to modernize the Warrior-Tombigbee barge channel. Its early construction is vital in order that the waterway may be more efficiently utilized as a carrier of the raw materials and heavy commodities necessary to sustain the economy of a heavily industrialized and expanding area. It is a major and indispensable step in conserving and putting to full use one of the principal rivers of the southeast.

With the completion of the Holt project, only one of the original structures, the John Hollis Bankhead lock and dam, will remain. Although built in 1915, it is structurally sound and meets all requirements of the waterway, except for the small size of its two locks, which are 285 feet long and 52 feet wide and operate in tandem to provide a total maximum lift of 72 feet. The continuing upward trend in commerce on the river doubtless will make replacement of these locks by a single modern chamber economically feasible within the next several years. It may also become necessary ultimately to install a 600- by 110-foot lock at the Oliver Dam to replace or supplement the present 460- by 95-foot lock.

In addition to the developments on the waterway's main stem, there also is a signally important project underway in the headwaters of the Warrior River. Under FPC license, Alabama Power is building the Lewis Smith Dam on the Sipsey Fork between Walker and Cullman Counties. The structure is one of three headwater storage dams recommended by the Corps of Engineers in a report contained in House Document No. 414, 84th Congress, 2d session.

The 300-foot high Smith Dam will provide a substantial measure of flow regulation. It will materially benefit the entire river valley and the State as a whole by assuring adequate water for navigation; by lessening flood damage now total-


MARION
WINSTON
CULLMAN
BLOUNT
Slippery Fork
Mulberry Fork
Mulberry Fork
LEWIS SMITH DAM
Jasper
LAMAR
FAYETTE
WALKER
Locust Fork
JEFFERSON
Port Birmingham
JOHN HOLLIS BANKHEAD L. & D.
LOCK 16
LOCK 15
Black Warrior River
BIRMINGHAM
PICKENS
HOLT L. & D.
LOCK 14
WILLIAM BACON OLIVER L. & D.
LOCK 13
Tuscaloosa
SHELBY
TUSCALOOSA
BIBB
GREENE
Eutaw
Tombigbee River
HALE
CHILTON
MISSISSIPPI
ALABAMA
Black Warrior River
WARRIOR L. & D.
Greensboro
PERRY
SUMTER
Demopolis
AUTAUGA
MONTGOMERY
DEMOPOLIS L. & D.
LOCK 3
DALLAS
MARENGO
LOCK 2
LOWNDES
CHOCTAW
Tombigbee River
WILCOX
JACKSON L. & D.
BUTLER
CLARKE
LOCK 1
Jackson
MONROE
WASHINGTON
Alabama River
CONECUH
ESCAMBIA
ALABAMA
FLORIDA
Mobile River
MOBILE
MOBILE
BALDWIN
Mobile Bay
GULF OF MEXICO
N
Map of
BLACK WARRIOR – WARRIOR AND TOMBIGBEE WATERWAY
Scale in Miles
10 5 0 10 20 30 40 50
Map made by Kurt Lang

ing an estimated $1 million annually in the basin; by increasing the supply of water for domestic and industrial consumption, and by creating new opportunities for water recreation. The ultimate generating capacity at Smith Dam will be 160,000 kilowatts.

Present plans are to close the dam during late 1960 with the reservoir going into normal operation during the summer of 1961.

Under the same license authorizing Smith Dam, Alabama Power will install a power plant with an ultimate capacity of 45,000 kilowatts at the Bankhead Dam.

The other two headwater storage dams recommended by the Engineers were proposed for the Mulberry and Locust Forks.

Major accomplishments have been made during the past decade in the program by public and private interests to fully develop Alabama's Warrior-Tombigbee Waterway in order that its potential may be realized in the future growth and expansion of a widespread region. It is essential that the program be completed with all speed consistent with economic justification.

The Warrior-Tombigbee Waterway is one of Alabama's most valuable and extensively used natural assets and deserves a high priority in plans for the conservation, development and utilization of the Nation's water resources.

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